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VETERINARY MEDICINE

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No. 2
VOL. XXIX

75 E. Wacker Drive,
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Junior FORT DODGE

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Vol. I FEBRUARY 1934 No. 1

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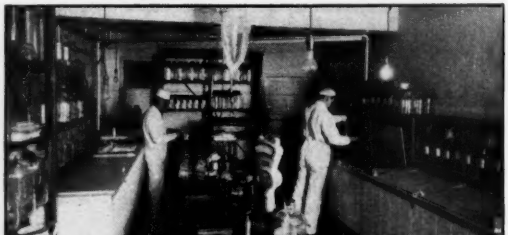

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Veterinary Medicine

Registered in U. S. Patent Office

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor
H. J. Mostyn, 230 Fifth Ave., New York, Eastern Representative

The difference between success and failure is only ten cents. The business man who takes in a dollar and spends only 95 cents is on the road to financial independence, but the fellow who spends $1.05 when he's got only a dollar is headed for the rocks.

* * * *

Experiments in the Bureau of Animal Industry indicate that liquid carbon disulphide is the most effective agent available for the destruction of bots in the stomach of the horse. Tests with the so-called "mass" carbon disulphide capsules, in which the drug is absorbed in a powdered base, indicate that these capsules are not so effective as are capsules containing the liquid drug. Furthermore, the mass capsules become brittle with age and there is a considerable loss of carbon disulphide.

* * * *

There are three types of the *Bacillus suipestifer,* a member of the Salmonella group—sub-type one, common in swine in America and but slightly pathogenic for man; sub-type two, common in swine in Western Europe, including England, and the cause of occasional outbreaks of food poisoning; and sub-type three, generally known as *B. paratyphosus C,* with rare exceptions found only in the East, India, Mesopotamia and the Balkans, and a common cause of paratyphoid-like infections of man in those countries.

Davenport of the Carnegie Institute, as a result of a study of the subject, offers convincing proof that resistance to disease, or susceptibility to it, may be inherited.

* * * *

The death rate of diphtheria was reduced in Philadelphia from 22.8 per 100,000 in 1920, to 1.5 in 1931. The widespread immunization of children with diphtheria toxoid is thought to have been responsible, in large measure, for this remarkable showing.

* * * *

Schilling, of the Robert Koch Institute, suggests exposing very young calves and colts to the bite of the tsetse fly as a practical means of developing an immunity to nagana, and thinks that the immunity of the wild hoofed animals of Africa to this disease is probably due to the infection of these animals when very young, when they have a considerable degree of resistance to it.

* * * *

Loco weed poisoning has been found by Vansell and Watkins of the U. S. Bureau of Entomology to be responsible for the death of many bees, particularly in Nevada, where the spotted loco, one of the more abundant and more poisonous species of the weed, flourishes. Before the investigation of Vansell and Watkins, this death of bees from locoism was thought to be due to a new and mysterious infection.

In his diary, under the date of August 31, 1665, Samuel Pepys records that more than 6,000 had died of the bubonic plague that week in London; he adds that the number was probably nearer 10,000, however, for the poor could not all be noticed and the Quakers and others would not have bells tolled for them.—*Hygeia.*

* * * *

One must view with apprehension the increasing number of weekly and monthly community sales of farm live stock held without any sort of official supervision and from which the animals are transported indiscriminately by truck. Many such animals are moved interstate before finally disposed of and their control after they leave the sale is extremely difficult. In fact, it is next to impossible to locate their destination. The only feasible way to prevent the spread of animal disease at such sales seems to lie in official control at the time of the sale.

* * * *

Regulations providing for the freedom of animals from certain diseases when coming into a state are, in considerable measure, unjustifiable unless and until that state has taken measures to control the disease within the state, and to control the intrastate shipment of animals. To cite a single example. There is little or no advantage in requiring dairy cows shipped into a state to be free from Bang's disease if Bang's disease control has not already been undertaken by that state, and there are known Bang's disease-free herds in which to put such animals. On the other hand, such a regulation requiring the importation of none but Bang's disease-free animals is a distinct disadvantage to the live stock industry of a state, as such animals must be used as replacements in infected herds. At the same time, such a regulation injures cattle owners of other states desirous of supplying replacements for the infected herds. To put it bluntly, it is neither logical nor good business for a state or its citizens to purchase a disease-free animal until there is a place to put it.

Horses and mules received at public stockyards during the first eight months of 1933 numbered 221,142, and for the first eight months of 1932, 171,557, a gain of approximately 29%.—*Our Dumb Animals.*

* * * *

It is often important to know the percentage of living and dead organisms in a bacterial culture. A method of estimating this has been developed by Frazier and Boyer of the U. S. Department of Agriculture. It consists of treating samples of the culture smeared on slides for microscopic examination, with the sterilized filtrate from a growth of streptococci from milk. This treatment changes the way the dead bacteria react to certain stains and thus gives a means of estimating the numbers of living and dead bacteria in the culture from which the sample was taken.

* * * *

In 1932 there were 22 million milk cows in the United States. They produced that year an average of 4,309 pounds of milk apiece. According to *Hoard's Dairyman,* it required 4,000 pounds of milk or 160 pounds of butterfat to pay the cow's expense for the year and thus the dairyman had an average profit of only 309 pounds of milk per year per cow. Upon this he had to live. Naturally, millions of these cows fell below the average production and produced no profit at all, many of them being maintained by the dairyman at a loss. It has been demonstrated repeatedly that a dairyman who exercises ordinary intelligence in the breeding, selection and feeding of his cows, can procure an average production of 6,000 pounds of milk or an average profit of seven times that actually received in 1932. Beyond question, the dairy cows now maintained at a loss, because of their low production, account for more than the present surplus of milk and butterfat, and thus are not only responsible for a direct loss to the dairyman because of their low production, but are responsible for a further indirect loss because of the low price of milk and butterfat, due to the surplus.

The gastric juice is an antiseptic; the pancreatic juice is not.

Morphine was discovered in 1815 by an apothecary, Wilhelm Serturner, of Eimbeck.

Professor J. B. S. Haldane, noted British scientist, has advanced the theory that the four blood groups indicate four different points of origin of the human race.

You cannot see white blood corpuscles, nor can you root for them in their fight against disease germs; but if you are sick, you can help them to be much stronger fighters by taking extra rest.—*Hygeia.*

There is a deficiency of cystine, a sulphur-containing organic compound, in the fingernails of some persons that are affected with arthritis. Sullivan and Hess injected collodial sulphur into the blood stream of six arthritic patients and noted that the symptoms of arthritis abated and the cystine content of the finger nails returned to normal. *Science,* 78:2021.

The use of parent's blood, or blood serum from recently recovered patients, is gaining in favor rapidly as a means of protecting children against measles. The disease can be prevented entirely or attenuated in this way. Given within three days after exposure, the blood or serum will prevent an attack; given the sixth day after exposure, it results in an attenuated attack. For children more than three years old, a light attack of measles is regarded as preferable to prevention, since by such an attack a permanent immunity is established.

The maggot treatment of bone injuries, called to the attention of army surgeons by Doctor Crile, of Cleveland, during the World War, is not new. The possible beneficial work of these larvae was noted by Paré, in the 16th century, and the value of maggots in removing necrotic and putrefying tissue in wounds was recognized by Larrey, a French surgeon, shortly after the Napoleonic campaign in Egypt. — *The Bloodless Phlebotomist.*

The daughters of the Greek God of Medicine, Aesculapius, were named Hygeia and Panacea.

The oldest prescription for drugs known is a stone tablet of 3700 B.C., bearing directions for making an inhalant for treating a head cold.

For preaching against cruelty to animals in 1772, the Rev. James Granger, vicar of Shiplake, England, was reproved by his Bishop and denounced by his congregation for prostituting the pulpit. The second sermon of similar nature sent him to prison.

The common brown or Norway rat, now abundant in nearly all parts of the globe inhabited by man, survives because he is so much like man. He can live in the same quarters, thrive on the same food and survive practically any climate that man can endure. He seems to think in about the same terms as man and can unpuzzle almost any trap of man's invention. He breeds so rapidly that in spite of man and his poisons, machines, dogs, cats, ferrets and house snakes, still holds his own.

MacArthur of the Royal Army Medical College [British] has shown that many cases diagnosed as true epilepsy are actually cases of brain infestation with tapeworm larvae. Investigating the occurrence of epilepsy among soldiers, he found over 60 different cases of infestation with cysticerci. There are no symptoms that distinguish such infestation from ordinary epilepsy.

In Illinois, in 1933, the mortality from diphtheria and diarrhea in children under two years of age was scarcely more than it averaged per month in 1920. Typhoid and measles caused about one-fourth the mortality attributed to these diseases in 1920. The deaths from these diseases were far below anything ever before experienced in the state since records have been kept.

Medical and Veterinary Achievements

NO ONE can applaud medical achievements in lessening disease and in lengthening the span of life more than members of the veterinary profession applaud it. We are deeply appreciative of the accomplishments of human medicine in lessening the diseases of childhood, in crowding diphtheria, smallpox and typhoid fever to the near vanishing point as compared with former prevalence of these diseases. We note with a great deal of pride the triumph of that profession over yellow fever and its material progress in the control of malaria, although in the matter of these two latter diseases, we hope we may be pardoned for pointing out that the success is founded upon the discovery, made by veterinarians, that some diseases are insect borne.

Veterinarians too have some achievements in disease control to which they can point with pride. In so far as a few of the diseases of animals are concerned, the veterinary profession has probably achieved greater success than has human medicine, since these diseases have actually been eradicated from the country and measures for their prevention rendered unnecessary. In this connection, reference is made to lung plague in cattle, formerly wide-spread throughout all the country from Illinois to the Atlantic coast and a serious handicap to the cattle industry; foot-and-mouth disease, the most infectious, the most readily communicable disease of animals which has invaded our shores eleven times, and eleven times been eradicated; dourine, a serious menace to the horse breeding industry, has been eradicated except perhaps for its presence among a few wild horses in inaccessible mountain fastnesses of Nevada; glanders, once the most widely prevalent, destructive disease of horses in this and other countries, has been practically eradicated, no one having seen a case of it in the past year and a half, and only a few cases have been seen in the past five years. With the success of the veterinary profession in the eradication of bovine tuberculosis, of course all are familiar. And, for one other animal disease—rabies—the veterinary profession has worked out all of the facts necessary for its eradication and has ready the machine to accomplish the job. The veterinary profession of this country stands ready and willing to eradicate rabies at any time the public wants it to do so. It is estimated that there are something like 50,000 pasteur treatments administered in this country yearly, and many thousands of farm animals are lost from this unnecessary disease. Veterinarians of other countries have eradicated it. We know how it was done and are ready any time the public wants it eradicated. The cost will not be high.

The veterinary profession has long been interested in public health, but its employment in this work so far has been only in special fields and somewhat disconnected. Meat inspection is almost wholly in the hands of veterinarians. Even the general public places little dependence upon any other sort of meat inspection and foreign countries to which we export meat, do not recognize any meat inspection at all that is not performed by veterinarians.

Milk inspection is, to a considerable extent, in the hands of veterinarians. It should be exclusively in the hands of this profession. A wholesome milk presumes a healthy source, and none but a veterinarian is competent to determine the health of the animal producing it. Furthermore, the success of milk inspection, to perhaps a greater degree than any other type of pub-

lic health, is dependent upon the education of the producers and handlers. Regulations just can't be made to guarantee good milk if the producer does not understand the regulations and the reason for them, and if he is not also willing to cooperate with the health officials in producing a good product. He is an individualist, most of the time off by himself. It is impractical to have an inspector on the ground to watch him all of the time.

Every major success that veterinary medicine has scored in disease control and eradication has been wrought over the protest and in spite of the violent objection of the agricultural leaders. Almost no epithet was too scurrilous to be applied by the agricultural press of the 80's to the veterinarians, from the Chief of the Bureau of Animal Industry to the practitioners, who were, at the time, rapidly encompassing bovine contagious pleuropneumonia. *The Breeder's Gazette* of lamented memory, then and for two generations, the leading livestock publication, led the obstructionists to the eradication of the lung plague in cattle. Its attitude was the attitude of practically all other farm publications. Their organized proselyting extended not only to agriculture but to the halls of the Congress.

In the nation-wide outbreak of foot-and-mouth disease in 1914-15, the same cohorts of medievalism in disease control, under the same leadership, were damning veterinarians, the only ones who could by any stretch of the imagination handle the situation, in unmeasured terms and demanding among other absurdities that a "practical livestock man" be placed at the head of the Bureau of Animal Industry.

The same group and the same publications were out in the front in opposition to the tuberculin test and any and all measures for eliminating the tuberculous cow from the public milk supply. But now that bovine tuberculosis eradication has achieved a large measure of success; forgetting their initial opposition and pointing to their support when the project became popular, and inevitable, they are loud in their claims for credit for it.

A Bureau official engaged nearly 20 years in fever tick eradication, in charge of that work in two different states, is authority for the statement that 95 cents of every dollar that has been expended on tick eradication has been wasted because of the meddling of politicians aided and abetted by the livestock interests of the infested territory.

The most wide-spread disease of swine in this country is hog cholera. Our experience with it dates back 100 years. It is costing the farmers of the United States $28,000,000 per year or 50c for each hog that they raise. It has cost them approximately this amount for many years. Measures for the control of this disease never have been in the hands of veterinarians. Veterinarians have participated to a greater or lesser degree in carrying out measures for its control, but always under lay direction. Canada, too, faces this problem of hog cholera control; but in going northward, when one crosses the invisible line that separates the two countries, one finds an entirely different condition prevailing. In Canada, hog cholera control has always been a strictly veterinary matter, none but veterinarians have or ever have had a finger in that pie, and note the result. While the cost of hog cholera to the farmers in the United States is, and has been for 15 or 20 years, $500,000 per million animals, over that same period in Canada it has been $175 per million animals. In other words, under agricultural control, hog cholera costs American farmers 3,000 times as much per animal as it costs Canadian farmers where the control of the disease is wholly in the hands of veterinarians. The swine industry of the United States and of Canada are not quite comparable, but hog cholera is no respecter of special conditions. The chief reason for the enormous difference in the cost of hog cholera in the two adjoining territories lies in the difference in the method of handling it. Veterinary medicine is a medical science, not an agricultural science. The handling of animal disease is a medical — a veterinary medical problem. Agricultural science is outside its field when it attempts to direct it and must inevitably fail.

Choosing a Location

By E. T. BAKER
Moscow, Idaho

HARDLY a week goes by during the year that we do not receive a query from some recent graduate or an older one:

"Can you suggest a good location?"

As we have been in every county of the Northwest, and in almost every state of the union, perhaps our ideas of suitable locations may be of interest.

Until only a few months ago was the subject of fair play and legitimate competition stressed in our national affairs. The old idea of "dog eat dog," and the "survival of the slickest," predominated in this Christian and highly civilized country of ours.

The Recent Graduate

It is merely a waste of time and words to say the recent graduate has emerged from college in a very unfortunate period of national life. With agriculture almost paralyzed, and the live stock industry at a very low ebb, the present status of the practitioner who is just starting is a precarious one. However, if it teaches one thrift and economical methods at the beginning of one's business career, the first great lesson of life will have been learned.

While attending a state association meeting this past winter, we were talking to a veterinarian who had spent nearly forty years in active practice, and whose head is filled with the wisdom that comes from hard and bitter experience.

"There was a time," he said, "when a boy, who decided to become a veterinarian, had to slave and scrimp to pay his tuition, and take a chance of eating whenever he could. He regarded his education as a valuable asset towards making a living in his chosen profession. He went out in the world and took his chances, without asking a favor from anyone. He was a capable, hardworking man who knew his stuff, or else he failed."

"Nowadays," he continued, "with all the state schools offering courses, the boy seems to think the country owes him a soft living after he receives this free education. He is full of fraternity and other high-falutin' ideas, and lacks the first principles of interest toward his future client or patient. Of course, we can't put an old head on young shoulders, but it's getting so I don't want one of these boys around, for they insult more clients than they make friends. There seems to be something wrong with our university training, and we had better get back to some of the old fundamentals."

Coming from a man who has observed conditions for more than four decades, we pondered on his words, and finally had to admit he is absolutely correct.

Do our colleges stress the practical side of making a living? Do they inculcate into their students the desirability of being an asset to their profession instead of a liability? Does the world care how many college honors a "book student" earns during his course, if later, almost every patient he looks at dies?

How many students are taught the first principles of business, or how to keep books? How many can get up before an audience of stock owners or hard boiled practitioners and make an interesting talk, without boring their hearers to death by dry, prosy facts? Does he know how much it costs to make a call, or the expense involved in mixing up a bottle of medicine? Does he keep in mind how many professional visits he will make for which he will receive his only reward in heaven?

Is he willing to begin in an humble way, and by prudent habits, accumulate a few dollars each year, until he is comparatively independent? Does he want to make friends with his older and neighboring colleagues, and find out about prevailing fees, and then charge accordingly?

An agreeable, honest personality is born and not made. We all know people who are so stubborn and mean that if they

drowned in a river, their bodies would float upstream. We once had a senior class in a state college, consisting of nine young men. Six were fine fellows, and have made good. One was a weak sister, who specialized on wine, women and song. The other two were just naturally "born mean," and, who perhaps could not help it. They never changed, and wherever they located they created trouble, just like a weasel in a hen house. One of them died recently, and his most charitable eulogy would be the same as the colored minister delivered over the body of a deceased crap shooter:

"Rastus, we hopes you is where we's 'fraid you aint!"

The Older Graduate

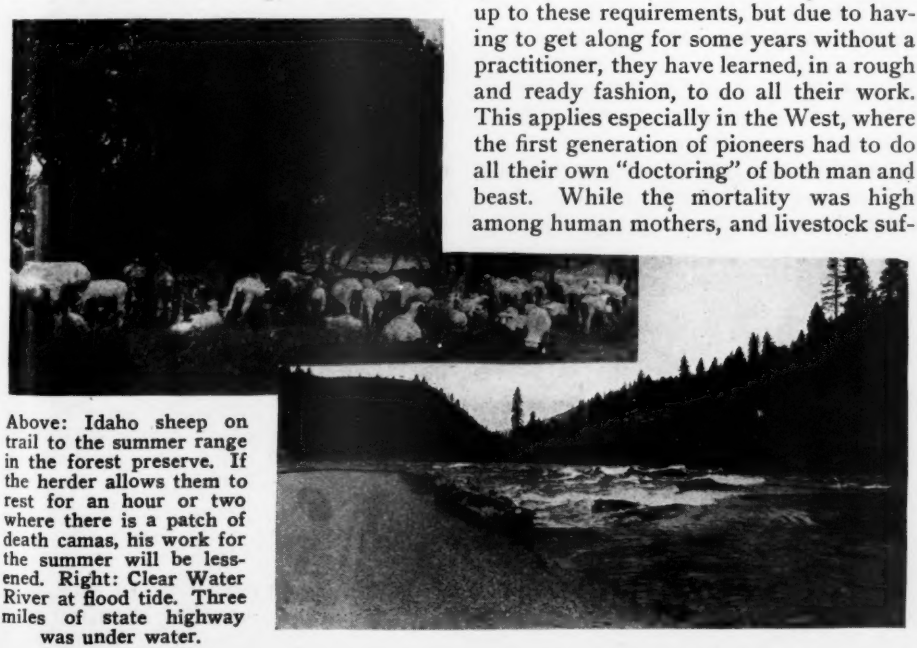
Due to some unfortunate occurrence, such as weather, financial conditions, or mechanized farming operations, many experienced practitioners are forced to seek a new location. In other cases, health is the principal factor.

Usually, these are high-class men who will not move into another's territory. We find some of these living on small tracts in a climate suitable to their health, making a living raising fruit or live stock. By their actions, they win the friendship of other practitioners, and just as soon as an opening occurs, they can step into it with the cooperation and friendly assistance of their colleagues.

The second type is the dishonest and crooked nomad, who, like Esau, is against every man and every man is against him. Like an old and wily coyote, this type, who proves to be a renegade to his colleagues and a shyster to his profession, can do more harm than the thoughtless recent graduate. He will calmly locate in a community already overloaded with practitioners, and immediately begins to demoralize the confidence of the public by cutting prices and gouging his clients in general. Then, when they "get wise" to him, he moves on to new and greener pastures.

What Is a Good Location?

First of all, a good location is one where there is sufficient livestock and owners who are financially able to call a veterinarian. Some communities may measure up to these requirements, but due to having to get along for some years without a practitioner, they have learned, in a rough and ready fashion, to do all their work. This applies especially in the West, where the first generation of pioneers had to do all their own "doctoring" of both man and beast. While the mortality was high among human mothers, and livestock suf-



Above: Idaho sheep on trail to the summer range in the forest preserve. If the herder allows them to rest for an hour or two where there is a patch of death camas, his work for the summer will be lessened. Right: Clear Water River at flood tide. Three miles of state highway was under water.

fered proportionately, they managed to get along and still do. This requires watchful waiting, and until an all-wise Providence summons home to heaven this class of tight-fisted ranchers, veterinary practitioners in their communities will have plenty of leisure on their hands.

We might cite our own experience along this line. In 1913, after four years of teaching and research work in two state institutions, the practitioner in our small country town wished to retire. He had been located here for over twenty years, and had purchased some land when it was very cheap. This had grown into money, and he felt that he could retire, and he asked us to take over the practice.

As we had been on very friendly terms with him, and had refused to practice while on a salaried job, perhaps this was the reason he offered us the opportunity. He was a sterling practitioner, a highly respected citizen and very ethical in all his dealings.

We therefore stepped into a practice already established, and it was up to us to continue the same class of good service. The fact that our community has had two practicing veterinarians the past forty-odd years very well illustrates what steady, conscientious effort will bring to our profession.

Building Up a Practice

It is one thing to step into a practice and another to hold it. The latter requires good, common horse sense, diplomacy and a reasonable amount of good luck. It is also a very important factor, for if one starts off with a streak of hard luck it requires years to live it down. We have known only one person who displeased no one, unfortunately, he died before he was born. The main thing, therefore, is to be able to please a majority of your good paying clients.

Let us mention two dairymen in our community, both clients of ours. Mr. A owns 30 cows; hardly ever keeps a hired man over three months, and is always fighting his neighbors. He is against all city milk ordinances, and has a fuss with a farmer every time he buys a load of hay. Nothing pleases him. When a customer complains about the milk, he almost has a convulsion. He owes us for nearly two years' services.

Mr. B also owns around 25 cattle, and is a pleasant, easy going fellow, who has had the same hired help the past ten years. He devotes all his time to producing such good milk that he seldom has a surplus. He will not purchase a cow that has not been tested for abortion, tuberculosis and mastitis before placing her in his herd. Last summer, with times as tight as they were he installed over three thousand dollars' worth of new machinery, and paid for it. At the end of every month he is in to pay his veterinary bill with a smile. That, in a couple of nutshells, as Mr. Andrew H. Brown would explain it, is the difference between a successful man in any line and a failure.

A sense of humor will help keep any practitioner from becoming morbid or "peculiar," and it is wonderful how much pleasure there is in this world if one only has the faculty to appreciate it.

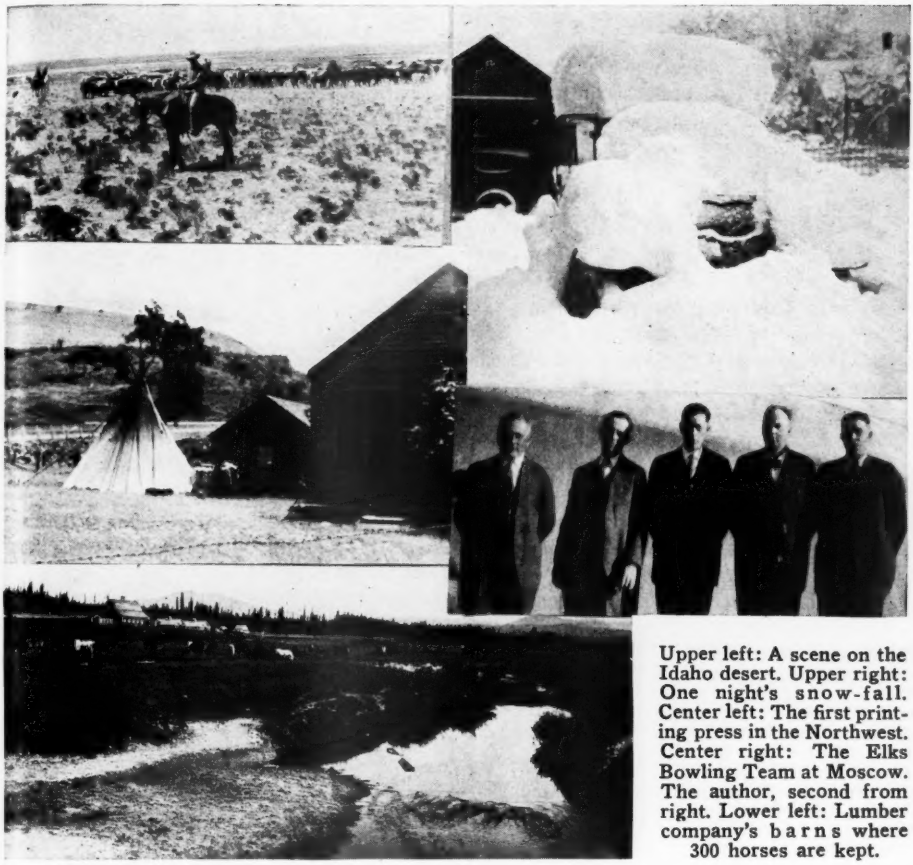
Fees

The charge for a call or other service depends on many things, based on the expense of conducting business. For example, as this is written, we pay 26½ cents for white gas, and $8.50 for a pair of good chains for our Buick coupe. Medicines are high, and we also have to carry a large stock of biologics on hand for emergency work, as we are some distance from our nearest supply house.

Our usual charge is one dollar per mile, one way. Of course, after one learns his community like a book, this schedule is very flexible.

For example, John Smith, living five miles south of town, calls us after breakfast to see a sick horse. It has only been ill an hour or so, and a hypo, a couple of capsules and a bottle of medicine left for administration by the owner, costs five dollars.

Bill Jones, five miles north of town, also has a sick horse, which he treats all day,



Upper left: A scene on the Idaho desert. Upper right: One night's snow-fall. Center left: The first printing press in the Northwest. Center right: The Elks Bowling Team at Moscow. The author, second from right. Lower left: Lumber company's barns where 300 horses are kept.

and calls us after dark. We have to spend several hours and a large amount of medicine and effort to save its life. The charge is ten dollars.

Mrs. Olson, an aged widow, whose husband was a good client of ours, has a sick cow, out five miles, also. We charge her three dollars and a half.

Link Stone, the tightest rancher west of the Rockies, also has a sick cow. We make a return call, and charge Link ten dollars. His heart almost stops beating as he writes out the check, but—it was a good cow.

Jim Larsen, whose wife is about dead of cancer, and whose crops were almost a failure last fall, due to the heavy fall of snow, has a cow with milk fever. We make the call and forget to put it on our books. If he does well in a year or so he may remind us of it; if he doesn't make any more in the next few years than he has in the past it won't do any good to remind him of the bill. It is all right with us either way.

A small kid brings in a dog with a needle in its throat, or a kitten with a fish hook in its foot. We remove it, give the small client a little ointment, and tell him that we will consider that our good turn for the day.

For dental work, we find a dollar a head is paid with good grace, and the same price is charged for bot eradication work

in small bunches, and vaccinating horses for influenza or hemorrhagic septicemia. If our client is rather poor, and the team is about all he has, plus a wife not suffering from sterility, we often give him some worm powder, gratis. We never tell him it is a tonic powder, for fear he may take some himself, and later on try to commit suicide on account of the size of his family.

Canine distemper vaccination the Laidlaw-Dunkin way comes at $2.50, while city calls to small animals run about the same. Equine castrations are from $3 to $5. Difficult parturition in the mare or cow, ten to twenty, and removing retained placenta five dollars, plus mileage. In the latter cases, we often administer a bovine laxative, and 250cc of calcium gluconate solution, if the patient is much emaciated.

Vaccinating hogs with serum only or mixed infection bacterin runs around four-bits a head, for fifty pound shotes. Tuberculin and abortion testing is one dollar per head, each test. We have small herds, and this is about our regular mileage.

We have many dirt roads in our practice, with about seven months of bad weather. When the snow is deep, we often induce the owner of a horse sick with impaction to come in for a bottle of medicine, which costs him one dollar and a half to three dollars. Bloat medicine or bovine laxative is one dollar per bottle. We never dispense anything less than one dollar, and when a good client wants only a dozen wax dilators, we give them to him. We go on the same assumption that a little favor, once in a while is appreciated, just as we appreciate the same at our favorite garage.

Perhaps you may think some of these prices are high, but when you learn we have marked over $9,000 off our books the past ten years, due to "busted" ranchers, you will see why we are not rich. For many years, we have made a practice of adding about four-bits to each call for bad debts, and as we make about 1200 calls a year, this helps make up for our loss. A $4,000 practice is just about the same as a $2500 salary. And $3,000 collected from a $4,500 practice is far better than $4,000 collected from a $7,000 practice. One should take into consideration the wear and tear on the human body for the cemeteries are full of misguided bits of dust who thought they "could stand anything."

Conclusion

A good location is what one makes it. However, the animal wealth must be there, or it is like fishing in a dry hole.

A community accustomed to good veterinary service offers the best field. Our advice to one seeking a new location would be to "spot" an elderly practitioner who would like to retire. A few dollars spent in purchasing a well established business would be a good investment.

No one particular section of the United States offers exceptional opportunities. As mentioned before, we have been in nearly every state of the union, and we have found advantages and disagreeable features in every one.

What may look like a poor location this year may be booming the next. If one has worried through the past several years and has made a living, it is a good idea to think twice before you jump to a new location.

It requires about five years in a new location to learn the roads, habits of the people, and to get accustomed to the community.

If at all possible, a recent graduate will do well to spend a year with a good practitioner. Then, let him try out his new wings in a place where he does not figure to locate permanently. He will learn quite a lot in about six months.

And last, but not least, start straight and keep that way. Nothing will give you more genuine satisfaction than to have the respect and friendship of your community and colleagues. We are only comfortably well fixed, financially, but we would not exchange our lot in life with a million-dollar "quack," who cannot mix with his fellow men without a guilty feeling. The older one grows, the more he appreciates what is known as "ethical standing."

Hermaphrodism in the Dog

By A. C. GARRETT,
St. Joseph, Mo.

HERMAPHRODISM, true or false, in small animals is not mentioned in the text books or literature which make up my library. I have read numerous discussions of this condition in the equine and bovine species, but when I was called upon to consider it in a dog I had nothing to serve as a guide as far as literature was concerned.

Two months ago a five-months-old black and tan terrier was admitted to the hospital for examination and treatment. The history obtained from the owner was meager. It was stated that the pup, a female, was attempting to "ride" the other dogs, a practice that was very embarrassing to the owner. The animal had also been bothered with a tumor-like mass protruding from the vulva. This mass had become irritated and raw.

Upon careful examination with the exception of this tumor-like mass I could not detect any abnormality. Palpation of the growth showed a mass of bone-like consistency apparently attached to the ischal arch. The entire mass seemed to be an overgrown clitoris. From these findings I felt justified in telling the owner that the animal was a hermaphrodite; as much male as female. I advised the removal of the ovaries and also the removal of the tumor-like growth. The owner readily consented, although I did not give him a great deal of encouragement as to the complete success of the operation.

The animal was given a cathartic pill in the evening followed with a high enema the next morning, complete anesthesia was induced by one and one-half grains of pentobarbitol sodium, with a little ether to help stimulate the heart and keep up the temperature.

Using the hook method, I proceeded to do the routine spaying operation. I had no trouble in locating the ovaries and removing them. To assure myself that all of the ovarian tissue had been removed I followed my usual custom of examining the ovaries carefully, and was much surprised to find that I had removed two well developed testicles. The testes were soft and rounded, about one-half to three-quarters inches long, each organ showing a well defined epididymis, and the supposed uterine horns were thread-like and resembled closely the vas deferens.

The animal was still under perfect anesthesia and I proceeded to remove the growth from the vulva. The area was thoroughly cleaned with soap and water. Using a needle, a ligature was passed down about one-quarter of an inch into the fold of mucous membrane on the anterior surface of the growth. This ligature served two purposes—to apply traction and control hemorrhage.

Next an incision was made around the apex of the growth down to the bone-like mass. The bone was dissected down about one-half an inch from the original incision, almost to the ischal arch; the bone-like structure was ligated and severed with bone forceps. The actual cautery was applied and all excess tissue was trimmed away and the wound closed with catgut.

The animal was kept quiet for a period of twelve hours; shortly after this time had elapsed its bowels moved and the bladder was emptied. The following afternoon the owner took the dog home. As far as I could determine, it was in as good physical condition as any of those I have dismissed after a simple spaying operation.

Two months have passed, and the owner tells me that the dog is in the best of health and acts entirely normal.

I would like to hear from other practitioners as to whether they have had similar cases.

Pyrethrum for Winter Control of Lice and Ticks

THE present low price of pyrethrum makes it the least expensive material to use in combating insect pests of livestock. Lice on cattle, sheep, or horses, and ticks on sheep can be killed with it without wetting or greasing the animal. The material is not poisonous to livestock and no danger attends its use. It can be used most economically when diluted with some inert carrier. The cheapest satisfactory formula is given below:

1 pound pyrethrum, (freshly-ground)
3 pounds flour
Mix together thoroughly

The material may be dusted on the animals with a sifter-can or may be applied with a small dust gun of the puffer type. The lice or ticks should be well exposed to the material by treating all infested areas. Experience in treating many animals shows a few "short-cuts" that will materially aid in the treatment.

Directions for Using Pyrethrum Louse Powders

1. Examine the animals in a good light and locate the lice.
2. Treat liberally, one-half pound of powder will treat one cow all over only twice.
3. Repeat the treatment for lice in 14 days. For ticks on sheep repeat in twenty-one days or less.
4. Dip sheep and spray cattle for control during warm weather and avoid winter troubles.

The reasons for these simple directions appear in the following discussions of the common parasites for which the treatment is applicable.

Cattle Lice

The small, chewing red louse is most commonly found on the backs of the cattle and can be controlled if the back only is dusted thoroughly. If the large, sucking blue lice are present, the entire animal will have to be treated because they frequent the brisket, neck, chin, belly, back, escutcheon, and sometimes are found about the udder or scrotum. A shaker may be used, but much of the application must be made by rubbing the material into the hair with the hand, treating the top of the head, face, nose, and tail carefully. The small dust gun is more convenient to use and takes slightly less material. About three to four ounces of dust is needed and the application should be repeated in exactly 14 days. If blue lice are present that do not respond to this treatment, 10 per cent powdered naphthalene or powdered moth balls can be added to the dust. This is sometimes a valuable addition, but is not usually necessary.

Treated animals should stop rubbing and licking in from four to seven days after the first treatment, and no live lice should be found at that time. The black patches of lice noticeable in white hair and on the escutcheon should disappear in about 48 hours.

Horse Lice

Lice on horses are similar to the lice on cattle but are not the same species. The treatment is much the same, but where only a few animals are to be treated, a stronger mixture of the dust is sometimes more satisfactory, since the cost is not prohibitive. For horses mix:

1 pound pyrethrum, with
1 pound flour

This mixture is a strong one and acts quickly. Particular attention should be given the mane, tail, and forelock.

Sheep-Ticks and Lice

Ticks and lice on sheep are readily killed by the mixture suggested for cattle, one pound pyrethrum and three pounds flour. In making the treatment, the sheep may be laid on its side and a shaker-can used to distribute the material. In using the small dust gun, one person holds the sheep in a standing position and another applies the powder. Three to four ounces of powder is required for each animal by either method, but better coverage is obtained by using the blower. It is not necessary to part the wool, as the powder dusted on the outside will work in and kill the parasites if it is evenly and generously applied.

It may be necessary to repeat this treatment, as the "nits" of the lice are not killed and the animals will be infested again later in the season. If lice are numerous, repeat in 14 days, and whenever the ticks appear in numbers, another treatment should be made. One treatment may be sufficient to hold the ticks in check until shearing and dipping time, but it is likely that two will be necessary if the infestation is bad.

Summary

Pyrethrum is not suggested here to replace warm weather methods of parasite control. Sheep and cattle can be freed of lice and ticks most efficiently and cheaply by dipping at the right time. The use of pyrethrum powder is suggested for control during the winter months when other methods are undesirable. Powdered pyrethrum is in no way harmful to livestock and can be used liberally without danger. —C. B. Dibble in Michigan Agricultural Experiment Station Quarterly Bulletin, Vol. XV, No. 4.

* * * *

Carotene, the plant substance from which animals are able to produce vitamin A and which is found in abundance in carrots, yellow corn and plant leaves, has been found by Ingraham and Baumann of the University of Wisconsin in certain bacteria.

Treatment of Ulcerative Colitis

Mercurochrome, intravenously administered, has in our experience proved to be the most satisfactory treatment for the prompt alleviation of the severe symptoms of this disease. It was first used for this purpose by D'Albora in February, 1925, his attention having been called to the fact that mercurochrome was excreted into the intestinal tract when, in a case of erysipelas with streptococcus septicemia, an intravenous mercurochrome injection had produced diarrheal stools, stained a deep red, and supposed to be bloody until D'Albora demonstrated the color to be due not to blood but to mercurochrome. The first colitis patient was a young woman 21 years of age, who had had the typical severe manifestations of the disease for nine months and whom none of the accepted treatments had seemed to help, who weighed but 70 pounds and whose hemoglobin was 45%. She was given a transfusion of 500 c.c. of whole blood, and four days later received 25 c.c. of a 1% solution of mercurochrome intravenously. The reaction was severe, the temperature reaching 102° F., and she showed a marked exacerbation of her diarrhea, with deeply red-stained stools, lasting for a day. Following this there was a marked reduction in the number of stools. She was therefore given two more injections of mercurochrome at four-day intervals, and after the third dose she developed a stomatitis, and a few casts and some albumin appeared in the urine. However, the bowel mucosa promptly healed, the diarrhea stopped, the albuminuria and stomatitis proved to be only transient, and she gained 30 pounds in weight within two months. Six years later she developed an exacerbation which was promptly relieved by two injections of mercurochrome, and for the past two years she has been perfectly well. Encouraged by his success in the treatment of this case by the new method, D'Albora continued to treat his patients in this way for four years before we made it the routine method in all suitable cases on our service at the Long Island College Hospital.—*Medical Times* 61:10.

Epizootic in the Equine Due to Parasites

By A. T. KINSLEY,
Kansas City, Mo.

Office of Agricultural Experiment Station, Christiansted, V. I.

IN DECEMBER, 1932, at the instance of the Governor of the Virgin Islands, I proceeded to St. Croix to consult with Dr. G. A. Roberts, Veterinarian for the Agricultural Station, Christiansted, St. Croix, Virgin Islands, to investigate a disease that has been quite prevalent in horses and mules there for the past three or four years.

History

The historical information was obtained from Doctor Roberts and his records of the investigation of this malady during the past four seasons and from personal visits of him and the writer, with owners and managers of estates. Direct observations relative to the care, yarding and feeding of horses, mules and donkeys were made on numerous estates and several villages.

The 1930 census report indicates that there were 950 mules, 650 horses and 200 donkeys on St. Croix Islands. Although exact information is not available, it is probable that there has been no increase in the number of these animals during the past four years. The majority of the mules are owned by the largest estates, and the major portion of the horses and practically all of the donkeys are owned by the small operators and laborers.

There had been no unusual losses of mules, horses or donkeys on St. Croix Island until about four years ago. When the planters were prosperous, the mules were provided a much better ration than they have had in recent years. The same statement probably applies also to horses and donkeys.

On practically all estates, yards inclosed with high stonewalls, which practically prevent any drainage, have been in continuous use for years. Most feed lots have provision for an ample supply of a good water, but, as a rule, feed racks have not been provided, and the feed consisting of guinea grass, blue wis or cane tops, is fed by scattering on the manure covered ground in the yards. In these yards, in the majority of instances, manure and debris accumulates for months. Because of the lack of drainage and accumulated manure, these yards become exceedingly filthy during the wet season.

Seasonal Occurrence

From all available information and particularly the records of Doctor Roberts, it is apparent that the malady in question attains its greatest prevalence during the wet season, that is, from July to January. Horses, mules and donkeys, regardless of age or general condition, are affected. Recurrent attacks of the disease are not unusual. An occasional animal may have three or four attacks in one season. From 80 to 90% of the untreated cases die. When proper treatment is applied in the early stages about 75% recover.

Prevalence

This disease is on the increase according to Doctor Roberts' records. The following indicates the number of cases observed and treated by him for each of the past four seasons:

July 1, 1929, to and including June 30, 1930—47 cases.

July 1, 1930, to and including June 30, 1931—171 cases.

July 1, 1931, to and including June 30, 1932—327 cases.

July 1, 1932, to and including Dec. 20, 1932—338 cases.

Thus, over 22% of the horses, mules and donkeys on the Island had the disease during the last six months of 1932, and of that number approximately 80 died.

Symptoms

Numerous cases, in various stages of the disease were observed and several autopsies held, after my arrival, December 12th. In the majority of cases, the affected animal had been fed cut green guinea grass, blue wis or cane tops before the disease became evident.

The primary symptoms characterizing the malady are evidences of indigestion and are manifested as three rather distinct types of colic as follows:

1. Gastric indigestion usually associated with fermentation and an accumulation of gas in the stomach. This type of case is manifested by marked colicky pains and if not relieved at once there is usually a prompt fatal termination.

2. A considerable percentage of the cases evidence rather violent pain in the beginning but the colicky pains subside or diminish in the course of 12 to 18 hours, after which the animal apparently may recover or it may become drowsy and pass into a stupor and die. Those animals that recover are prone to future attacks. Doctor Roberts' records show that several horses and mules have had from two to six recurrent attacks of thrombo-embolic colic.

3. The largest number of cases manifested symptoms characteristic of impaction colic. These cases have rather mild colicky pains and there is no evacuation of the bowel. These cases will persist for two or three days and unless elimination from the bowel is successfully induced, putrefaction its contents results in toxemia and death.

Typical Senegal oxen used in St. Croix.

This type of indigestion is probably the result of a diminished intestinal circulation due to parasitic injury of the principal blood vessel that supplies the bowel with blood. It was also noted that this type of case is of less frequent occurrence in mules and horses that are provided with molasses feed which keeps the bowel lax, than it is in animals not receiving molasses.

Autopsy Findings

The tissue changes noted on autopsy were in accord with the three types of cases.

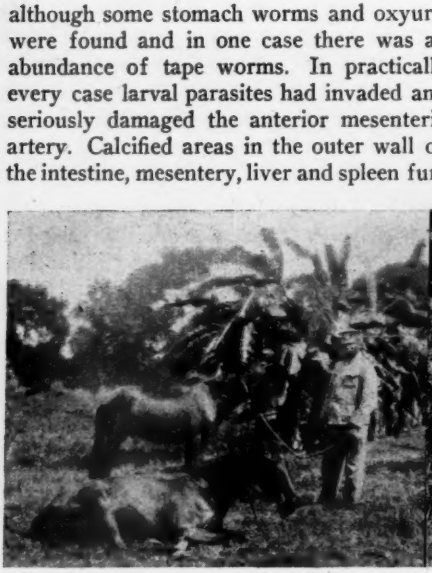
1. Dilatation or rupture of the stomach was the outstanding autopsy finding in those cases that evidenced gastric indigestion.

2. Hemorrhages, apparently due to obstructed circulation, in various tissues were evident in those cases in which colic was the result of obstructed circulation, but the principal autopsy finding of these cases consisted of a marked venous engorgement of a portion of the intestine. The affected intestine being thickened, black in color and showing degeneration and necrosis of the intestinal wall.

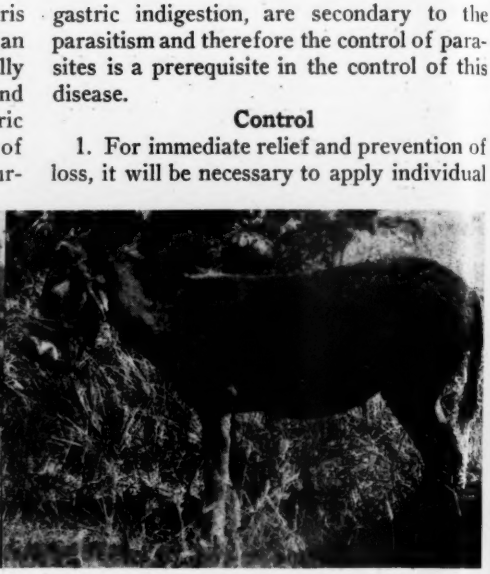
3. The tissue changes in the impaction cases consisted of hemorrhages of varying size in the mesentery and intestine. There was an accumulation of excess quantities of relatively dry feed matter in the large intestine.

In all cases numerous worm parasites were found attached to the mucous membrane of the intestine and the intestinal content was a teaming mass of parasites. The majority of the parasites were strongyls,

although some stomach worms and oxyuris were found and in one case there was an abundance of tape worms. In practically every case larval parasites had invaded and seriously damaged the anterior mesenteric artery. Calcified areas in the outer wall of the intestine, mesentery, liver and spleen further evidenced the damage done by parasites that had permeated the intestine and migrated into the tissues.



Horse and mule at the King Hill Police Station. Both were sick four days. The horse recovered, the mule died.



Typical attitude of affected animals. This donkey had been sick 12 hours when the picture was taken; it died 24 hours later.

Diagnosis

As a result of the investigation it was evident that the numerous parasites that constantly occur in the digestive tube of horses and mules are probably a primary factor in the occurrence of the disease. Other conditions may be found that also influence the malady, since this investigation was made in a relatively short period of time.

St. Croix horses, mules and donkeys harbor several different kinds of parasites. Various species of strongyls are the most important because they are most numerous and are the cause of serious damage. Climatic conditions in St. Croix are ideal for the multiplication of parasites. The method of yarding and feeding mules on the estates and of the care and feeding of horses and donkeys by the small operator and laborer in villages favors the development of parasites.

The digestive disorders, colic, etc., previously mentioned, excepting the cases of gastric indigestion, are secondary to the parasitism and therefore the control of parasites is a prerequisite in the control of this disease.

Control

1. For immediate relief and prevention of loss, it will be necessary to apply individual treatment to visibly sick animals. According to the records, Doctor Roberts has been very successful in relieving the sick provided the treatment is given in the early stages of the disease.

2. Prevention of parasitic diseases is more economical and effective than curative treatment. In preventing parasitic disease, it is necessary to hinder or prevent the development of the parasite.

The strongyls live in the intestine during their adult stage and their eggs are carried out in the feces. When the temperature is 70° F. or above and there is ample moisture the eggs hatch promptly. Thus, the accumulated manure, whether in mule pens, under trees or elsewhere, contain thousands of larvae. These young parasites crawl upon stems, sticks, grass, etc., hence cut feed scattered on the accumulated manure becomes contaminated and animals eating feed contaminated with manure are infested with the parasites. Some of the ingested parasites ultimately attach to the inner wall of the intestine and some of them penetrate the bowel wall and migrate into various tissues,

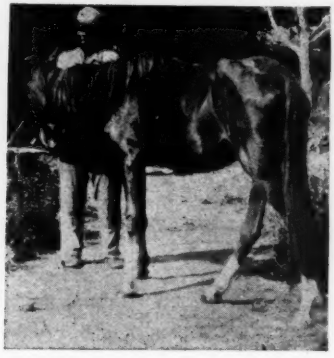
some of them ultimately gain entrance into blood vessels, liver, spleen, etc. To diminish the possibility of infestation of horses, mules and donkeys from contaminated accumulated manure in pens, sheds, under trees or wherever the animals are fed, two things are necessary.

(a) Clean the pens, sheds, etc., frequently, using the manure to fertilize cane land. Because of the lack of drainage in most mule pens, this preventive measure would be more effective if new pens with ample drainage provision are provided.

(b) Provide feed racks in the place of feeding on the ground. Feed placed in feed racks will diminish greatly the infestation with parasites.

The second method of attacking these parasites is to treat the animals periodically with some reliable vermifuge. Because of the fact that the majority of the mules are owned on the estates and the horses and donkeys in the villages it will not be difficult to treat practically all horses, mules and donkeys on the Island. The drugs necessary are relatively inexpensive. Such a method of procedure in the writer's judgment will materially diminish the number of cases.

Abdominal viscera from a donkey dying at Upper Bethlehem. The arrows indicate hemorrhages along the attachment of the mesentery to the intestines. The flies were big and bad around there as may be noted.



Result of a heavy parasitism.

Supplemental Report

On December 20th, Dr. G. A. Roberts and the writer proceeded from St. Croix to Puerto Rico, for the purpose of observing a horse disease that was said to be prevalent in Puerto Rico and to confer with Puerto Rican veterinarians relative to their opinion as to the cause, methods of control and treatment of the malady.

Dr. J. Bague of the Department of Agriculture provided a Government automobile for our transportation. Doctor Menandez also supplied transportation for Doctor Roberts and myself from San Juan to Central Fajardo and then to Fajardo. Conferences were held with the following:

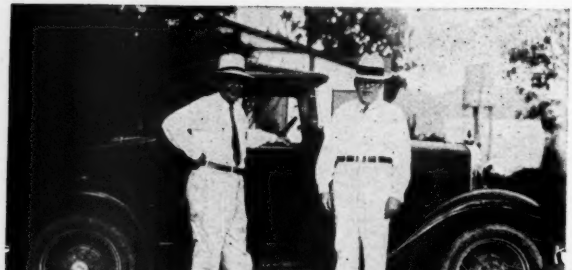
Dr. John Varas, Aricebo; Dr. Van Volkenbury, Mayaguez; Doctor Alvarez, Mayaguez; Dr. A. Pou, Ponce, and Dr. F. Menandez, San Juan.

All of the veterinarians conferred with were very courteous and gave much valuable information relative to the disease in Puerto Rico. Several centrals were inspected in different parts of the island and observations made of the methods of handling and feeding of horses and mules.

The following is a brief summary of the conferences and observations in Puerto Rico:

A disease characterized by indigestion prevails in Puerto Rico. The symptoms and autopsy findings of the Puerto Rican disease are the same as the symptoms and autopsy finding of the disease in St. Croix.

It is interesting to note that approximately 150 race horses are maintained at San Juan and are fed only grain and hay imported from the States, and there never has been a



Doctors Roberts (left) and Kinsley at the Agricultural Experiment Station, December, 1932.

case of the horse disease in these race horses. The absence of this disease in these race horses that are not pastured or fed native grass further supports our findings, viz.: that parasites are an important factor in the cause of the disease.

Horses, mules and donkeys in Puerto Rico may become affected with diseases other than indigestion and intestinal parasitism. In fact, some of the Puerto Rican veterinarians were of the opinion that there were probably some losses incident to other diseases.

Although there are some variations in the method of feeding and yarding of horses and mules in Puerto Rico and St. Croix, viz.: contaminated lots, the feeding of green feed that is or may readily become infested with parasites. In at least one central in Puerto Rico, over 100 head of horses and mules have been grazed in one pasture for several years, a procedure that practically insures contamination of the grass with parasites.

Conclusion

It is my opinion, and this opinion was concurred in not only by Doctor Roberts but also the Puerto Rican veterinarians, that the principal cause of losses of horses and mules in Puerto Rico is primarily indigestion (colic) induced either directly or indirectly by intestinal parasites.

Even though every horse, mule and donkey in St. Croix is treated and the yards, sheds and tie places are cleaned of manure and kept clean, there will be an occasional case of indigestion due to previous injury of the mesenteric blood vessels. It will be necessary to continue the treatment and preventive measures to avoid future epizootics.

Psychology in Small Animal Practice

By WM. E. RUGGLES, Portland, Oregon

THE study of the human and animal mind is seldom given due consideration in the daily practice of veterinary medicine. This so-called psychology might well be termed the third phase of our profession if we should care to analyze it so, the other two being our medical knowledge and business ability.

The first, our medical knowledge, was taught us for four years in college. We retained some of this, at least until the examinations were passed. After graduation we became more practical. With experience, the reading of medical literature, and with our discussions of medical subjects at our meetings, we are able to do justice to this phase of our work, better perhaps than to either of the other phases.

The second, or business phase, is often the downfall of a professional man. A good practice may easily be ruined by poor business organization, and a failure to apply the fundamentals of buying, selling, collections, savings, and investments.

The third phase of our work is the one most neglected. There is a great opportunity here for increased study and application of the simpler theories concerning the mind and reactions of both man and animals.

During the past ten years the veterinary profession has gained much in public confidence. This is because the type of men in the profession are better fitted for the work and have the equipment to give the service that the public demands, and is entitled to receive. We usually find small animal hospitals located on prominent thoroughfares.

They are neat and attractive on the outside, and the interior is clean. The patients have every necessary facility for care. The veterinarians in charge present an appearance in keeping with the surroundings. For example let us take the very high class animal hospital and veterinarian, and note the result on the mind of the public which has been accustomed to seeing a dingy old wooden building, with torn curtains, a broken window, a urine-smelling reception room, and an operating and examination room combined in one. Perhaps to complete the picture, one would see the doctor in a blood-besmattered jacket that was once white, and the repulsive habits and bearing that went with it. The patient would be shoved into a dark, dirty cage and left there on a hard board floor, to receive attention probably once a day, if the attendant didn't forget about it. Is there any need to mention the contrast of most of our own hospitals today?

Then let us suppose that a case comes to you after it has been treated by a competitor. What is the advantage for you to knock his methods in an un-professional manner? You may be absolutely right in your diagnosis and treatment, but the case may not have the outcome you anticipate, for reasons beyond your control. If you have criticized the other fellow, then the client might well wonder whether or not the second doctor knows any more than the first. He would probably lose confidence in veterinary service, and rely on proprietary medicines thereafter, from the drug store, or some pet shop and seed store, where he will be given diagnosis over the telephone with the recommendation to buy a certain numbered medicine put up by unscrupulous veterinarians, and sold in a certain drug store where bright-colored, cure-all fluids are on display.

Sentiment plays a very important rôle in small animal practice. One person will bring in a sick dog and think of only one thing, that the animal shall receive the best of care for as long as may be necessary. A deposit is left without hesitation. The next client must know how much it will cost before you have even diagnosed the case. If he has $20 in mind to spend on the dog, even though he could afford a thousand, and you tell him that it will be approximately $60, very likely you will get only an examination fee.

The public should be better educated as to the care necessary in treating animals, and taught that their ailments and recuperating powers are very similar to our own.

Most veterinarians underestimate their actual value and service. We charge from $5 to $25 for a major abdominal operation, using the same technique, skill, antisepsis, and requiring nearly the same overhead as our brother physician who commands from $50 to $250, and accordingly receives that much more respect and appreciation. If we obtained more for our services, our skill would be more esteemed. We could have better equipment, maintain a higher social prestige, support more civic enterprises, travel, and thereby learn and obtain the proper recreation necessary for one who is as confined as most of us are by our hospitals. Instead of giving so much free advice every day, we would be able to make appointments for our consultation and diagnosis on the case in question.

Service with satisfaction probably cures as many cases in the client's mind as do pills given three times a day before meals. It is essential therefore that the owner realize the condition of the case as much as possible, and be kept in that state of mind until the patient is discharged or well. No one is able, especially in our line of endeavor, to please everyone. Suppose you tell a client, with all sincerity and honest judgment, that her cute little Pekingese may be over his distemper in a few days. Then for no explainable reason whatever the dog is in dog heaven the next morning before you arrive at the office, but after she had called at 6 o'clock A. M. and learned from the attendant that her dog had passed away. The result is that you have probably lost a client.

To hide your light under a bushel is not logical, nor is it any more logical to toot your horn so loudly that it annoys the neighbors. Veterinarians have received considerable desirable publicity in recent years. They have obtained front page pictures and col-

umns for removing a needle from a dog's throat, or for saving the life of a President's favored pet. They are found in civic clubs and boosting civic enterprises and the welfare of animals. They are found working in cooperation with physicians to protect the public health. This type of publicity is valuable for all of us. But what does the public think of Doctor Jones if he is sued for malpractice, arrested for drunken driving, or if he advertises over the radio that he will give free advice concerning the ailments of their pets?

Put yourself in your client's shoes and treat him as you would want to be treated. So much for human psychology. Everything we do or say has its effect on the people with whom we deal.

Animal psychology is much more interesting and fascinating than the study of human mind and reaction. Animals are more sincere and real, and therefore more pleasant. Once an animal is your friend he is a true friend, not troubled by the petty things which annoy most human friends.

When a patient enters your office, you have to impress it, as well as his owner, in a rather short time. If it be a police dog, chow, or a smooth-coated fox-terrier, it might be well to take a little precaution before you pick him up and put him on the examination table.

The expression in the eyes and the movement of the tail tell a long story. With experience one can usually surmize at a glance whether or not the dog is friendly, shy, snappy, spoiled, or too ill to show any of his peculiarities. Dogs have as many different individual characteristics as do people, and the detection of these may save you from having a tooth put through your hand or the embarrassing remark "the dog doesn't seem to like you."

Too often we attempt to rush our relations with the patient. A few kind words to the animal, finding out his name, and obtaining the history of the case, will give "Rags" time enough to satisfy himself that everything is all right, and you can examine him from head to foot, or clean his teeth and ears without a whimper—which is much better than we would do. Dogs are more easily handled on a table than on the floor for the same reason that we would probably not be so apt to invite trouble at a cliff's edge or in the cabin of an airplane as on the ground. They are more easily taken care of when the owner is not around, because he is usually saying something to soothe the animal which in reality only makes it nervous. This also applies in treating an animal in his home where there is an added difficulty to overcome in that you are trespassing on the property and taking unusual privileges in the house which he guards day and night.

The reason for gaining the patient's confidence is to make him feel at home and in a receptive mood for treatment. Rubbing a dog's ears, a few kind words, and handling him in a manner that you can gain his confidence will probably accomplish more than you realize in shortening the time it takes to cure his ailment. Figure out his peculiarities. If a dog is particularly fond of a certain food which you always have on hand, give him a bite after the owner has departed. Should this be repeated several times, you will probably hear the owner say "you must be very fond of dogs" or "they get very good treatment here as Jerry is always glad, it seems, to come in."

There is the greatest difference in the requirements for handling cats and dogs. Very gentle handling of cats is essential to even cleaning the ears. Handle them lightly and stroke or tickle the chin. Never slap a cat if he doesn't do as you want him to do, for he will nearly always jump off the table, scratch you, or be very obstreperous to handle thereafter. As a general rule it takes more petting and coaxing to obtain a cat's friendship than it does for a dog.

If you can make up with an owner's pet and be about the only one who ever did, then you have gained a lot in the confidence of that owner. This may be the deciding factor in the animal's being left in your care.

This study of the human and animal mind and reactions is indeed fascinating and should be considered more in small animal practice.

Practical Control of Bang's Disease in Commercial Dairies*

By M. F. WILKINSON,
Utica, New York

THE records indicate that not much was thought about abortion in cattle until about the beginning of the 19th century; although in England as far back as 1567 Mascal called attention to it.

My experience is that Bang's disease is found in most cows in dairy sections. It seems that where there has not been extensive dairying or intensive breeding that abortion disease does not bother much. But when we come to intensive farming of the type one finds in New York State abortion becomes widely prevalent.

The losses from this disease are disastrous to some herd owners. I can point to dairy after dairy in the Utica section which has had an abortion cycle and found themselves bankrupt or almost in that condition. You all can do the same. What can the veterinarian do in such herds so that the dairyman can save his income as well as his investment? That is a vital question for the practitioner. With the help of our laboratories one can determine the percentage of infection; but this does not begin to solve the problem. It only furnishes information upon which to begin the solution.

The state authorities seem to believe we can lick this trouble by blood testing and elimination, and so could the Chinaman roast his pig by burning down his house.

The tube test is too cumbersome, when one has to send his blood samples to a laboratory. A good many samples have a chance of being spoiled in transit. It is too expensive also and there is too much delay. Blood testing for abortion will have to be done cheaper before there is universal or even wide-spread use of it by the dairyman. The plate method seems just as accurate; eliminating just as many reactors as the tube test. This plate method test can be made by the practitioner, at his own office, with very little expense and the results are back to the cattle owner much quicker. After all, in the ordinary run of practice the blood test only reveals what the dairyman and practitioner already know full well.

In the last few years, I have vaccinated a good many herds with living, avirulent organisms; giving each open cow and virgin heifer a somewhat larger dose than that recommended by the manufacturer. I have even made mistakes and vaccinated pregnant cows with no ill effects. I follow the directions on the package except as to dosage. My results so far have been wonderfully satisfactory.

To the dairyman who has a large percentage of aborters in his herd I feel it my duty to advise vaccination at once. It has worked well. It has saved a good many farmers from bankruptcy. If they had not vaccinated they would have had to sell their entire dairy and restock, which financially would have been impossible. The blood testers and eliminators are all for the slaughter of such herds. But what about the dairyman whose living may depend upon them? All he would have to do is to buy a new clean herd at once and maintain his milk supply and hold his customers. Buy where and with what?

*Read at the November, 1933, meeting of the Central New York Veterinary Association, Syracuse, N. Y.

The Relation of Disease in Animals to Public Health*

By FRANK J. JIRKA,
Director Public Health,
Springfield, Illinois.

THE health officer is primarily an administrator. His business is to develop and put into practice policies and programs designed not only to protect but to promote the public health. To this end he draws from numerous fields of endeavor the various services needed to accomplish his purpose. No one science and no one profession can provide the public health service with a program worthy of the name. Medicine, dentistry, nursing, bacteriology, education, chemistry, psychology, engineering, biometry, nutrition, veterinary medicine and various other specialized fields must be depended upon by the health officer for heavy contributions of knowledge and service if he succeeds largely in fulfilling the duties of his office.

To determine the principal needs of a program the health officer depends upon statistical records. These show the magnitude and causes of mortality. They suggest the extent and character of illness. They show what diseases are most hazardous and which age groups fall victims most easily to this or that danger. They indicate, moreover, the sort of knowledge and the kind of skill needed to combat danger at every point along the whole battle-front of activities directed against illness and incapacity.

Diseases in animals may affect the public health in both a direct and an indirect way. Such diseases as undulant fever, tuberculosis, rabies, tularemia, anthrax, glanders and trichinosis may be transferred directly from animals to man. Another class of diseases which includes septic sore throat, scarlet fever and diphtheria originate in man but can be transferred to cattle and then become the source of serious epidemic outbreaks when passed back to humans. This is particularly important with respect to septic sore throat and scarlet fever. During the last ten years there have been reported in the United States 40 odd outbreaks of milk-borne scarlet fever involving more than 2,500 cases, and 40 epidemics of milk-borne septic sore throat involving over 6,000 cases. Before the introduction of pasteurization, milk-borne outbreaks of scarlet fever were more frequent and extensive.

Another group of diseases which include typhus fever and Rocky Mountain spotted fever reach man from animals through an intermediary insect host. These two diseases of that class have been increasing in importance recently in the United States, especially Rocky Mountain spotted fever. Not only have case reports increased noticeably but the disease has been recognized over a larger and larger geographical area. In 1931, for example, the 252 cases reported were distributed among twenty states with fully one-third of the incidence occurring along the Atlantic seaboard. A few years ago it was thought that this disease occurred only west of the Mississippi. Last year the incidence of Rocky Mountain spotted fever jumped to 421 cases, nearly twice the figure for 1931 and the highest incidence so far recorded.

Animal diseases may influence the public health unfavorably in still another way. This pertains especially to dairy herds. When animal diseases of any kind tend to reduce the milk output per cow or affect unfavorably the nutritional quality of the milk, the result may be an increase in such human diseases as rickets and malnutrition. The feed and doubtless the health of cattle has an important in-

*Presented at the Fourteenth Annual Veterinary Conference, College of Medicine, University of Illinois, Chicago, October 16-17-18, 1933.

fluence over the nutritional quality of milk. The vitamin D content of milk, which relates especially to rickets in young children, can be made to vary widely through the care and feeding of dairy herds. The quantity of milk obtained from cattle influences the price and thereby tends to expand or restrict the use of milk.

It has been shown that the modification of cattle feeding can be depended upon to so increase the vitamin D content of milk as to make unnecessary the use of cod liver oil or other special anti-rachitic preparation for the prevention of rickets in infants. It appears that the practice of feeding dairy herds in a way to greatly increase the vitamin D content of milk has already become general in the New England area. If we might look forward to the general adoption of this practice so that health officers could recommend milk as a rickets preventive, a great stride in promoting public health would have been achieved.

Rickets is not only a fairly common cause of death but it leads to complications that may result in serious deformity. It certainly leaves such ungainly conditions as bow legs and knock knees. It results in stunted growth which numerous studies indicate applies to the mind no less than to the body.

The seriousness of the rickets problem is suggested by statistics relating to death from that cause and by those relating to the sale of cod liver oil in the United States. Although the percentage of rickets cases which terminate fatally is very small, no less than 5,133 deaths have been charged against that disease in the United States and 394 in Illinois during the last decade. In normal years no less than 3,000,000 gallons of cod liver oil are sold in the United States. These data indicate that a tremendous field is open for the expansion of the milk industry if it can be developed so that health officers may, with confidence, recommend milk as a practical rickets preventive. In a project of this kind the veterinarian would be a factor of no small importance. Upon him would devolve the business of guiding the milk producer in matters pertaining to the feeding and the health of herds so that milk would meet the standards required while the health of the herds remained unimpaired.

Activities of the veterinary profession with respect to bovine tuberculosis have taught health officers to repose great confidence in that profession in regard to health problems among animals that endanger human health.

Statistical evidence indicates rather clearly that mortality among humans from bovine tuberculosis has decreased almost to the vanishing point. On the assumption, based upon the opinion of tuberculosis specialists, that bovine tuberculosis is confined largely to children and especially those under five years of age, and that the bovine type is most frequently manifested in tuberculosis of the abdomen, it seems clear that very little bovine tuberculosis now exists among humans in Illinois. In 1907, for example, 6% of all deaths from tuberculosis were among children less than five years old, whereas in recent years no more than 3.4% were among that age group. No significant change of this kind took place in reference to people in the 5 to 9, the 10 to 19 and the adult age groups. Moreover, in 1932, only 2% of the deaths from tuberculosis in the state, exclusive of Chicago, were among children under five years old, although a great deal of unpasteurized milk is used by the downstate population and practically none in Chicago. This is added evidence that human tuberculosis of bovine origin has been practically eliminated.

Furthermore, abdominal tuberculosis constituted less than 4% of the total mortality from tuberculosis among children under five years of age in 1930 and 1931, against 11% in 1907 and 10% and 6%, respectively, in 1913 and 1920. Changes in the percentage of abdominal tuberculosis among older groups tended toward the unfavorable.

Pasteurization of milk and the teaching of parents to prevent intimate contact be-

tween infants and tuberculous patients have, of course, been factors in the decline of childhood tuberculosis. It is extremely difficult to appraise accurately the relative importance of the various factors which have resulted in the favorable progress. At the same time there seems to be no doubt that the eradication of tuberculosis among dairy herds has been responsible for a substantial proportion of the decline in tuberculosis among children who suffer the brunt of infection from bovine sources where it exists. Keeping milk cattle free from tuberculosis is the only safeguard against bovine infection which the customers of about 10,000 raw milk dealers in Illinois have.

Further evidence that the control of bovine tuberculosis has had an important influence in reducing human infection from that source, is the experience in Great Britain as compared with that in Illinois. A commission made up of ably qualified members found evidence that 6% of all deaths from tuberculosis in England and Wales are caused by the bovine type of bacillus and that 6.7% of the raw market milk contains living tubercle bacilli.

In down-state Illinois where a considerable proportion of the milk sold is not protected by pasteurization only 4.5% of all deaths from tuberculosis occur among children under fifteen years old, the group believed to be principally affected by bovine tuberculosis when it occurs. Only 2.3% of all deaths from tuberculosis are due to non-pulmonary forms among children under 15 years old in down-state Illinois.

In respect to the consumption of milk, moreover, Lord Astor pointed out in the British House of Lords that Canadians drink twice, Americans three times and the Danes and Swedes six times as much milk per capita as is consumed in the United Kingdom. "Our underconsumption of milk," declares the *London Lancet* in commenting upon these facts, "is no doubt partly due to faulty education, but both defects are certainly due to our failure to grapple with the problem of producing an adequate quantity of safe milk."

This indicates a clear recognition of two important public health influences that animal diseases in dairy herds exert. These diseases, especially tuberculosis, constitute an active danger of causing illness among consumers of milk and they tend to discourage the use of milk as a food. "There are whole streets in some of our industrial cities," said Lord Astor, "where not a drop of milk is purchased."

Undulant fever probably constitutes the greatest danger in the immediate future, of human infection from bovine sources. Case reports have steadily increased in Illinois and in the United States at large. In 1926 when the disease was first recognized in Illinois only five cases were reported. This figure jumped to 10 in 1926 and practically doubled annually thereafter until 1931 when 124 cases occurred. In 1932 the figure dropped back to 76 and up through August 43 cases had been reported this year.

The course of recognized prevalence has followed a somewhat similar trend in United States at large. From 112 cases reported in 1927 the recorded prevalence of the disease jumped to 1578 in 1931 and 1502 in 1932. Hasseltine believes that at least 25% of the recognized cases are not reported. Upon this basis it may be assumed that fully 2000 new cases now occur annually in the United States.

While an incidence of this magnitude is not particularly impressive at the moment the fact that undulant fever appears definitely to be on the increase is important. Furthermore, the disease creates an economic problem of no inconsiderable proportion. Probably no less than 10% of the herds of the country are infected. Much higher percentages have been reported from several States. A recently completed survey in Virginia that included some cattle from every county indicated an average of 10% infection. This corresponds to the experience reported by Graham in Illinois. In Iowa 26% of 1,300

cattle from selected herds tested positive for Bang's disease.

An infection rate of 10% among dairy herds undoubtedly reduces the volume of milk obtainable on the one hand and, on the other, creates a definite risk to human health when pasteurization is neglected.

The undulant fever problem is one that could be solved only with the greatest difficulty without the services of the veterinarian. Upon him the health officer must depend to an even greater degree than with respect to tuberculosis. Undulant fever apparently reaches humans only from animal sources. This puts the veterinarians in a strategic position. In attacking the problem among animals he becomes an important factor in the public health machinery.

From the lower animals the health officer also inherits the turbulent problem of rabies. This is one of the largest and doubtless the most exciting of human health problems that originate in animals. No less than 8894 animal heads were examined for rabies in the public health laboratories of Illinois during the decade ended with 1932. Of that number positive evidence of rabies was found in 3,272, a matter of 37%. The dogs whose heads were submitted for examination are estimated to have bitten no less than 15,000 people.

This introduces the matter of treatment. It is the policy of the State Department of Public Health to distribute vaccine free for the treatment of indigent people bitten by dogs believed to be rabid. The demand for this free vaccine has more than doubled in the last three years and it has tripled since 1929. Last year vaccine was provided by the Department for 933 people against 405 in 1930 and 317 in 1929.

In spite of these efforts 45 people died of rabies in Illinois during the last ten years. For the United States 804 deaths were charged against rabies during the last census decade. Based upon the Illinois experience this would indicate that 160,000 dogs heads were examined in the public health laboratories of the country and that no less than 268,000 people were bitten by dogs believed to be rabid.

Lately there has appeared with increasing frequency expressions of doubt as to whether there is such a disease as human rabies. Coming from sources that enjoy public confidence to a considerable degree, this tendency is serious. The most sensible answer to that skepticism, perhaps, is that nothing seems too strange to believe.

No normal man who has ever seen a fellow creature suffering from rabies cares to witness a second case. The evidence that this condition follows and results from wounds inflicted by rabid dogs is overwhelming. Prior to the discovery of the Pasteur vaccine method of prevention about 15 out of each 100 people exposed to the bites of rabid animals fell victims to this ailment. Last year the State distributed treatment for 933 people and no doubt the total number treated in the State was considerably higher. There were four deaths reported giving a fatality rate of about 0.4%. Even if only one-half of those treated had been bitten by animals unquestionably rabid the proportion of deaths would still be less than one per cent.

The experience in Illinois agrees fairly well with that reported by the League of Nations. Three studies made by that agency and involving respectively 69,541, 69,707 and 31,656 people who were treated for rabies in various parts of the world, showed fatality rates of 0.23%, 0.48% and 0.49%.

Veterinarians can exercise a powerful influence over public opinion, especially in rural districts with respect to rabies. By using that influence in accordance with the established facts the way of the health officer can be made much easier.

Septic sore throat probably affects the health officer more dramatically than other diseases of animal origin. Milk borne outbreaks of this infection are frequently explosive and violent. They often affect large numbers. A State or a com-

munity may be free from epidemics for years only to experience a sudden outbreak of large magnitude without warning.

This happened during the past summer in Warren and Saratoga Counties in New York State. Over 7% of the population in two adjoining villages in these counties were ill with septic sore throat spread through raw milk drawn from an infected cow. Crumbine tabulated a total of 36 milk-borne epidemics of septic sore throat that occurred in the United States during the eight years ending with 1931. These 38 outbreaks involved an aggregate of 6095 cases.

Epidemiologists believe that the original source of septic sore throat is in humans. Milk-borne epidemics take place when the udder of a dairy cow becomes infected and then sheds germs into the milk that carries the infection back again to human consumers.

The importance of septic sore throat as a health problem is suggested by the fact that 3,000 cases with 1,000 deaths are reported annually in the United States. Last year no less than 4594 cases were reported in the United States. While only about one-fifth of the cases are milk-borne, the danger of spreading through this medium is constant. Milk-borne outbreaks, moreover, have been traced not infrequently to producers with a high reputation for sanitation.

Other diseases in animals make trouble for the health officer in various ways. Tularemia, aside from the sickness it causes, leads to the laying of quarantine here and there against importing rabbits from certain areas, thereby creating economic problems of importance. Anthrax occurs frequently enough to create a problem with respect to the control over such things as shaving brushes. Rocky Mountain spotted fever and typhus fever urge upon the health officer problems of sanitation which may be calculated to reduce the prevalence of insect hosts such as ticks and lice. The very rapid increase in Rocky Mountain spotted fever, from less than 250 reported cases in any one year prior to 1929 to 421 last year makes the health officer look with particular concern toward preventive measures with respect to it.

To summarize briefly, diseases in animals make problems for the health officer for three reasons. They constitute a considerable risk of spreading sickness direct to man. They tend to discourage the general use of such important food products as milk. They are expensive to stock owners in a way that tends to reduce milk and other food supplies. This tends to increase the cost of and limit the sale of dairy products on the one hand, and to reduce the income of the producer on the other. Both tendencies reduce the standard of living and indirectly the level of public health.

In attacking this intricate problem of manifold ramifications the health officer must depend largely upon the veterinary profession. While safeguards such as pasteurization of milk and vaccination against various diseases can be built up to great advantage, these procedures do not strike at the root of the problem. Healthy animals, particularly cattle, is the end sought by the health officer in solving these problems.

* * * *

Sterilizing Ice Cream Freezers

Sterilization of ice cream freezers in three commercial plants by means of steam, hot water, and chlorine was studied[13] to furnish a basis for the formulation of sanitary regulations for ice cream equipment. Chlorine solution did not penetrate the bearings and bacteria developed in the wet freezers. The cold refrigerant around the freezer chilled the hot water so that excessively large amounts at very high temperatures were required. Steam sterilization was slow, but it was entirely satisfactory. Steam also dried the freezers, and it sterilized the bearings. Rinsing the freezers with chlorine solution prior to using was a desirable supplement to steam sterilization.

[13]New York Agric. Exp. Sta.

Hog Cholera Breaks*

HOG cholera breaks like hog cholera waves, seem to occur in cycles. That is to say, hog cholera following the serum virus simultaneous vaccination for its prevention, occurs some years in a far greater percentage of cases than it does in other years.

A number of explanations have been offered for this, but perhaps not any of them are entirely satisfactory, just as no entirely satisfactory explanation has yet been offered to explain why hog cholera occurs in cycles of greater intensity. A study of the weather records at Ames, Iowa, has shown that rainfall or other weather conditions bear no relation to hog cholera cycles.

Hog cholera was formerly thought to be an intestinal infection of the *Bacillus suipestifer*. It is now regarded as a septicemia due of course, to a filterable virus. The enteritis, pneumonia, etc., so commonly seen in swine suffering from cholera, are complications of the disease and not a part of it.

The discovery of the filterable virus changed our entire conception of hog cholera. It was the discovery that the bacillus would immunize laboratory animals, but would not immunize hogs against cholera that led to the discovery of the filterable virus.

THE discovery of anti-hog cholera serum and its high efficiency as an immunizing agent against the disease, had one unfortunate effect. It caused us to drop all research work on hog cholera and sit back with altogether too much of a feeling of satisfaction, and it is only recently, and the result of experience in the field rather than research work, that we have awakened to the fact that the *B. suipestifer* is by no means the harmless organism that we have thought it to be. Hog cholera breaks are of two sorts.

1. Serum breaks where the serum used is not potent and no immunity is conferred. Such breaks occur, of course, in from one to two weeks after vaccination and are the result of the inoculation of the animals with virus at the time of vaccination.

2. Virus breaks. These result where the virus given at the time of the vaccination is not virulent and only a temporary immunity is conferred on the animal by the vaccination. Cholera in such animals will appear on exposure subsequent to about 30 days or even a little earlier.

There is a probability that in the past the stage has been all set for many virus breaks that never occurred because the animals were not later exposed to infection and they ultimately went to market susceptible to cholera.

ASIDE from these two unfavorable sequelae following vaccination, serum breaks and virus breaks, other trouble may develop that is not the fault of the vaccination but for which something inherent in the hog or his environment is responsible.

The immunity conferred by the serum-virus simultaneous treatment for hog cholera should not be regarded as absolute and everlasting. It is possible to break it down in many instances, by certain conditions that are rather frequently present in the field. The amount of immunity developed following vaccination depends upon the hog. If he is weak, he doesn't develop as much immunity as otherwise and he may not develop any at all. Thus, suipestifer and other infections and heavy parasitisms present at the time of vaccination affect its outcome. So does the feeding immediately following vaccination.

These mishaps can be avoided by vaccinating only healthy animals that are reasonably free from parasites and giving them proper after care, and it is the duty of the veterinarian to attend to such matters.

* Notes from an address by C. H. Stange, Dean, Division of Veterinary Medicine, Iowa State College, Ames, at the Twelfth Annual Meeting of the Wisconsin Veterinary Medical Association, Madison.

WE MAY therefore say that the veterinarian has a responsibility for a loss following serum breaks or virus breaks or due to the vaccination of animals when they are suffering from infectious enteritis or other infectious diseases or heavily parasitized. There are conditions, however, in which there may be a loss in hogs following vaccination where the responsibility cannot be placed upon the veterinarian. It seems that when healthy hogs are properly vaccinated with a good serum and virus and the usual degree of immunity produced, it is possible by a series of circumstances to lower this immunity to a point where the animal will contract cholera on exposure. Fortunately, the combination of circumstances that will so lower the immunity produced does not often occur. It is thought that some such combination as the following, will break down a strong immunity to cholera in a considerable percentage of swine.

A heavy parasitism followed by infectious enteritis, followed by heavy feeding of green corn. In other words, a series of debilitating ailments and conditions insufficient in themselves and in combination, to kill the animal, may lower the vitality to a point sufficient to make him a victim of cholera even though he had possessed a high degree of immunity previously.

Preventing Cholera Breaks.—In the very beginning we shall avoid a whole lot of trouble by the use of large doses of serum and many add to that, ample quantities of virus, although there seems to be a question whether the use of more than 2cc of virus adds anything to the immunity produced. Veterinarians with large experience in vaccination regard the dose given on the label of the serum bottle as the minimum in all cases and they increase this dose for many reasons—wherever they have the slightest reason to suspect that anything may be wrong with the hogs, the care, and feeding and thrift, parasites or disease, they increase the dose.

In localities where the farmers shop around to get vaccination done at the lowest price, we see the largest number of serum breaks. A low price necessitates the use of a small dose of serum. The man who won't cut prices on vaccination, and who therefore can freely use the dose of serum that he believes to be required, may lose vaccination jobs occasionally but in the long run he establishes a reputation for successful work and builds up his practice.

The care given the animals has an important influence. Some veterinarians want no change in feeding made at the time of vaccination. Others want the feed and particularly the corn reduced. Probably a combination of both plans is the right one. Certainly any radical change in feed at the time of vaccination is prone to lead to trouble and it is equally certain that heavy feeding and particularly feeding on corn is disastrous at the time and immediately following vaccination. The best plan would appear to gradually get the hogs on to the proper feeding ration before they are vaccinated.

THE problem of revaccination must be settled by diagnosis. We must not allow the fact that the animals have been vaccinated even if we know the vaccination was done properly and we have every confidence in the serum and virus, blind us to the fact that the condition may be cholera and if it is cholera, that revaccination is required. When trouble follows vaccination, the question is right up to the man who did the vaccination. Is the trouble hog cholera; is it infectious enteritis; is it hemorrhagic septicemia; is it flu? What is it?

These questions he must answer. His state experiment station cannot help him very much nor can he always depend upon help from the distant manufacturer of the serum. In the majority of cases, the problem is his to work out, and I might also say that in the majority of cases that the trouble is due to a combination of two or more things. However, if hog cholera is present, the animals must receive serum regardless of other conditions that may be present. And, this is the first question that the practitioner must decide when going to a herd in which trouble has developed following vaccination.

THE Iowa Experiment Station has made some tests of the immunity conferred by the vaccination of baby pigs. In 1922 we vaccinated 32 pigs at six to 14 days of age. These pigs were from immune sows, were given 1cc of virus and 10 to 15cc of serum. At the age of 10 months, they were given 5cc of B. A. I. virus and one died of hog cholera.

In 1923, we vaccinated 49 pigs at the age of 12 days. All were from non-immune sows. Their immunity was tested at eight and one-half months of age by the injection of 5cc of virus; all lived.

In 1924, we vaccinated 11 baby pigs with similar results. No loss. In 1926 we vaccinated six groups of baby pigs at varying ages and later tested the immunity by the injection of virus. Of six pigs vaccinated at eight days of age, none died. Of eight pigs vaccinated at 17 days, seven died. Of seven pigs vaccinated at 22 days of age, five died. Of eleven pigs vaccinated at 27 days of age, six died. Of three pigs vaccinated at 31 days of age, one died. Of eight pigs vaccinated at 42 days of age, two died.

These results of course, were disastrous We know of no explanation for the failure of vaccination in 1926 under conditions where success followed in 1922, 23 and 24. Of course, as you all know, 1926 was the year of the big outbreak of cholera. The suggestion has been made that the virus in 1926 was so virulent that the 1925 virus did not produce sufficient immunity to render the pigs unsusceptible to it.

SINCE 1921 we have been vaccinating our own hogs at the Experiment Station before weaning. These are of the regular swine herd and used for various purposes, but not for hog cholera experiments. These hogs have not been tested for susceptibility later, by the injection of virus nor have they been exposed to known cases of hog cholera. However, I may say that the exposure of the experiment station herd is far greater than that of the ordinary herd. Visitors come to this herd daily from all parts of this state and beyond question they receive considerable cholera exposure in the course of a year.

We have had no loss in these pigs in the six years we have been following this procedure and we have undoubtedly avoided a whole lot of trouble by vaccinating them before they were weaned. Formerly when we vaccinated these pigs at eight to 12 weeks of age, we had lots of trouble from enteritis. Apparently there is little enteritis infection in the intestinal tract of suckling pigs and it is when the pig goes on to a vegetable diet that the suipestifer is able to establish itself and if the pig gets a dose of virus at this time, it not only enables the suipestifer infection to flare up with disastrous results, but the latter may prevent the development of immunity to the filterable virus.

Forty Questions About Wild Animals

1. Which is the most magnificent American animal?
2. Which is America's largest game animal?
3. Which animal exhibits much social instinct?
4. Which animal by legend is noted as a weather prophet?
5. Which animal is one of the scourges of civilization?
6. Which animal is the cow's greatest competitor in milk production?
7. What two mammals lay eggs?
8. Which animal is cowardly and has a weird cry?
9. Which is the most northerly mammal?
10. To what fur does the trade name "French Sable" refer?
11. What is the largest carnivorous animal found in America?
12. Which animals are our chief fur bearers?
13. Which animal is probably the most useful in its food habits?
14. Which animal really needs glasses?
15. Which animal is noted for its trait of pretending to be lifeless when attacked?
16. Which animal is the hunter's delight?

17. Which animal for its size is the most courageous and aggressive?
18. Which animal is the most shy and graceful?
19. Which animal is a charming diver and swimmer?
20. Name two animals which are miners.
21. Name the biggest thief of the animals.
22. Which is the chief engineer of the animal kingdom?
23. Which animals build houses?
24. Which animal is the chief chemist of the animal kingdom?
25. Which animal played an important role in colonial commerce?
26. Which animal is the most wanton killer?
27. Which animals are like a gang of bandits?
28. Which animal might win a popularity contest if conducted among animals?
29. Which animal initiated commercial fur farming in America?
30. Which animal furnishes the fur known as "Hudson Seal"?
31. To the fur of which animal is the trade name "Black Marten" applied?
32. Which animal is the most fearless?
33. Which mammal has the shortest gestation period?
34. Which the longest gestation period?
35. Which animal is a marauder and killer of great repute?
36. Which animals may be likened to traveling men?
37. Which animal avoids man, yet is cunning enough to live close to civilization?
38. Which animal furnishes the meat known as "marsh rabbit"?
39. What is the name of the animal furnishing ermine?
40. Which animal lives largely on white grubs, cutworms, and other destructive insects?

—*F. B. Hadley*

Madison, Wis.

NOTE—Doctor Hadley's answers to the foregoing questions will be published in an early issue. How many of them can you answer? Send in your answers.—ED.

Bovine Mastitis*

BOVINE mastitis is a disease of world-wide distribution, but it has received strangely little attention in veterinary literature. Hutyra & Marek do not mention it in their new Pathology.

Of the organs chiefly responsible for mastitis, the streptococcus group are most important and the streptococci are notoriously hard to classify. This has probably led to the great difference of opinion as to the cause, pathology and treatment of bovine mastitis.

Bovine mastitis is responsible for a vast economic loss, loss of milk, lowered value of animals and mortality. I shall confine my discussion to an attempt to answer the following questions:

1. What etiological factors are constant?
2. How is the disease spread in a herd?
3. Of what importance is sanitation as a control measure?
4. Is the teat canal the usual port of entry of the infective organism?

In any discussion of mastitis, it is essential that it be divided into two groups: (1) clinical mastitis, and (2) latent mastitis.

Statistics for mastitis in various countries from New Zealand to Holland and Italy to America show an incidence of 10 to 15%, probably an average of about 12%.

My own experience in herds totaling 2,000 animals where unusually complete records have been kept, over a period of ten years, show an incidence of 10%.

Many investigators report finding a streptococcus as the most frequently-occurring organism in this disease, and the most important. Latent mastitis is due to the same organisms and in the same percentage as is clinical mastitis. Staphylococci and *B. coli*, while less frequently found in mastitis, are more damaging when present. From a public health standpoint, the presence of hemolytic streptococcus (*Streptococcus epidemicus*) is most important.

* Notes from an address by Otto Stader, St. Charles, Illinois, at the Twelfth Annual Illinois Veterinary Conference, University of Illinois, Urbana.

Sherman found one-third of all the normal cows to harbor hemolytic streptococcus in the udder. Davis found 85 strains of hemolytic streptococcus in 300 samples examined. Busch found 28% of normal cows harboring the hemolytic streptococcus. The streptococcus found in the normal udder is identical with the streptococcus found in mastitis. Most literature credits the hands of the milker, the milking machine, vaginal discharge and surroundings as being the source of infection in bovine mastitis. However, there is no experimental evidence to prove such statements and there is much clinical evidence to refute them.

For example, the injection of gargety milk through the teat canal in normal udders often fails to cause clinical mastitis. Smearing the ends of the teats, the cups on milking machines and the hands of milkers with the udder contents from cases of acute mastitis has failed to convey the disease to normal udders in a considerable number of experiments. That the surroundings are not responsible is indicated by the fact that organisms usually found in dung are not commonly found in mastitis. *B. coli* organisms enormously numerous in cow manure are responsible for less than 1% of the mastitis.

A better explanation perhaps lies in the assumption that the organisms in the udder are brought to it by the blood. The blood supply in the hind quarters is from the external pundic artery and reaches the hind quarter perpendicularly. The front quarters are supplied by a horizontal branch of this artery. Organisms to pass the teat canal must work behind the seal (sphincter), must proceed against gravity and a strong opposite milk flow periodically. If the organism causing mastitis reaches the udder through the teat canal, what explanation can be given for the fact that there is almost as much mastitis (9.5%) in certified herds as there is in herds (10%) given ordinary care as shown by the reports of the Brookfield Certified Dairy and the 2,000 animals to which I referred earlier. In the 500 animals constantly maintained at the Brookfield Certified Dairy, no case of contagious mastitis has appeared in nine years. One-half of this time, the animals were machine milked, one-half they were hand milked.

An experiment in that dairy was run on 12 cows in which the milk cups of the milking machine were dipped in gargety milk regularly for four and one-half months and the disease was not communicated. Then the teats of all 12 cows were scarified and gargety milk rubbed into them. Still no cases of mastitis developed.

In small herds the fact that mastitis appears and seems to go right down the line affecting one cow after another has misled me. In large herds where various milkers are employed we do not see this. In such herds, the cases occur here and there without relation to the location of other cases or to the milkers.

I believe that the occurrence of mastitis depends chiefly upon resistance or lack of resistance of the stresses and strains of lactation. Although we cannot cause the disease with any regularity by injecting gargety milk into the teats or rubbing it into scarifications on the teats or by contact, we can produce it with regularity by traumatism, the application of cold and the retention of milk, and it occurs under such conditions just as regularly where the ends of the teats are sealed with collodion as where they are not. And another thing, feeding infected milk will cause it in a considerable percentage of cases.

If, therefore, mastitis is due to a lowered resistance, is it not a logical procedure to use measures to raise the resistance? In a period of over eleven years, and having had under my control in that time a total of more than 25,000 cows, I have had excellent results in the prevention of mastitis from the use of four or five doses of an autogenous bacterin made up from all of the strains of organisms occurring in the normal udders in the herd. This bacterin is given to all animals in the herd and at intervals of not longer than seven or eight months. Leukocytes are probably a big factor in the prevention of mastitis and if we can increase them by the use of bacterins, is it not logical to raise the resistance of the animal to the infection?

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Professor of General Pathology and Pathological Anatomy at the Italian Royal Superior Institute of Veterinary Medicine of Perugia.
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Assistant in Hygiene and Sanitary Police at the Royal Superior Institute of Veterinary Medicine of Torino (1912).
Assistant at the Torino Experimental Station for animal diseases (1915-1917).
Head of Studies of Hygiene and Sanitary Police (1917-1924) and later also of General Pathology and Pathological Anatomy (1919-1925) at the Superior School of Veterinary Medicine of the Royal University of Pisa.
Nominated Professor of General Pathology and Pathological Anatomy of the Royal Superior Institute of Veterinary Medicine at Perugia (1927), Royal Commissioner and Director.
National corresponding member of the Italian Society of Veterinary Medicine, Member of the Toscanian Society of Natural Science, Member of the Medical Academy of Perugia, Member of the Italian Society for the Progress of Science.
Has published numerous articles on veterinary medicine and allied subjects, not only in Italian, but in foreign journals also.
It is expected that Professor Gasperi will attend the 12th International Veterinary Congress in New York next August.

Frederico De Gasperi

The International Veterinary Congresses

REGULATIONS for the control of infectious diseases of animals are as old as recorded history. The waves of barbarians that periodically swept westward into central Europe from the vast steppes of Asia carried to the invaded territory in their wake various animal plagues, for this section was then, as it has been ever since and still is, the great reservoir of animal plagues of the eastern hemisphere. In the early centuries of this era, the Huns, Vandals and Goths brought these plagues to the gates of Rome and we find in the Roman Codex fairly effective measures for the control of animal plagues.

Of all plagues that have decimated the live stock of Europe during the past millenium and a half, the record of rinderpest is the clearest and the best known. A study of this record is profitable even now because of what it reveals of the nature of all epizootics and what has been done, and particularly, what not to do. The incursion and recession of the successive waves of this disease across Europe from Russia to the British Isles during the past one thousand years or more have erected clearly legible sign boards for the guidance of sanitarians everywhere.

With the advance of civilization in Europe and the consequent ability to inaugurate and prosecute bigger and better wars, the live stock plagues came into their own, for war from the beginning of recorded history to the beginning of the present century, has been the great ally of pestilence. For 1500 years, every country that warred with Russia or her near neighbors, suffered greater economic loss from rinderpest than they did from the armies of the enemy.

Charlemagne when he returned from his campaign against the Danes in 810, brought rinderpest with him to France. It reached England at the same time, and scarce 50 years passed in the next thousand years in which one or more great areas of Europe was not devastated by rinderpest, called in those days from the area in which it originated "Steppe disease," "Steppe murrain," "Russian disease," etc.

The reason for this spread of plague in the wake of armies is obvious when it is recalled that the high prices paid by

armies for beef resulted in the driving of live animals to the army over distances as much as 600 miles on each side of its line of march. Thus, when an army marched a distance of 2,000 miles, as they sometimes did, we have a great strip of territory 2,000 miles long and up to 1,200 miles in width in which the horned cattle were indiscriminately commingled; for as Gamgee said: "A potent means of spreading any pestilence is war, which breaks through every precaution or measure suggested by human prudence."

In the seventeenth century, rinderpest may be said to have reached its stride and in this period more than 30 million cattle died of it in the German states alone. In 1714, it reached England for the third time and broke out in the environs of London in July of that year. The regulations immediately promulgated for its control at that time, 220 years ago, are interesting today. They follow:

1. That all cows affected with disease should be burned. [The body of the affected animal was recognized as a source of contagion of first importance].

2. The stables in which the sick cows stood were to be washed and disinfected, by burning pitch, tar, and wormwood in them. They were to remain empty for three months before any other cattle were admitted into them again. [Thus was recognized the efficiency of antibiosis].

3. The fields on which sick cattle had grazed were to remain empty for two months. [Even the the destructive effect of sunlight was recognized].

4. Persons attending on sick cattle were not to go near healthy ones. [The possibility of mechanical conveyance of the contagion was recognized].

5. Cow-keepers were to be instructed to separate any cows refusing food, and the cases were to be reported to the authorities. [The value of early diagnosis as a means of preventing spreaders was appreciated].

6. Cow-keepers were to separate their stock into small lots, each of which was not to consist of more than 12 animals. All complying with the orders were to receive compensation. [Common sense means of limiting the spread].

It required six months to eradicate the disease. The government killed more than 100,000 animals to prevent its spread and a much greater number was lost from the disease.

In 1745, it again invaded England and laid waste the country for more than 12 years before it was brought under control. Efforts to control it resulted in the slaughter of animals at the rate of 7,000 a month at one time during this period. In the same period, more than 3,000,000 head of cattle died of rinderpest in central Europe.

Rinderpest followed Napoleon on his return from Moscow, and invaded Italy in the course of the Russo-Turkish war, killing 4,000,000 animals in that country alone in three years. In 1842, it invaded Egypt with a virulence never before experienced and, virtually uncontrolled and unrestrained, burned itself out in three years by destroying almost all of the cattle and buffalo. In 1848, it spread over central Europe and caused great excitement. By 1857, the fear of it in England was such as to paralyze the cattle trade, and that period was later known as "the panic of 1857." At that time, the London Times carried daily articles on its progress in western and southern Europe. A number of British veterinarians were sent by the government into affected areas to study the disease.

To revert to the causes that brought about the extension of rinderpest to every important live stock country in Europe during the last century. In the comparative peace that followed Napoleonic wars, the population of western Europe increased rapidly and exceeded the capacity of the local animal industry to feed it, thus stimulating tremendously the importation of cattle from Russia, where they could be purchased very cheaply. By 1840, the population of London approximated two million. Importations of meat were mandatory. The teeming population could not be fed without it. Lacking re-

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President of the Danish League against Cancer.
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Member of l'Office International des Epizooties, Paris.
Member of the Permanent Committee of the International Veterinary Congresses.
Member of the Sub-Committee of Experts on veterinary questions of the League of Nations 1928-31.
Honorary member of veterinary associations in Denmark, Norway, Sweden, Finland, Great Britain and North America.
Member of l'Académie de médecine vétérinaire de France.
Member of cancer-associations in France, Germany, Roumania a. o.
Honorary member of several Danish and foreign medical and physical associations.
It is expected that Professor Jensen will attend the 12th International Veterinary Congress in New York City next August.

frigeration the meat was imported on the hoof. The ports of England were thrown open to free trade in foreign cattle in 1838. Foot-and-mouth disease was the first plague to arrive in the following year, and while it was creating havoc, contagious pleuropneumonia came (1841) and later, sheep pox. These plagues served to increase the scarcity of cattle in the British Isles and to further stimulate importations. A point was reached where 20,000 milk cows were required annually to supply replacements for London dairies. The average period that these cows remained in the dairies was only five months, after which they were slaughtered to prevent their death from pleuropneumonia, there being at that time no restriction on the sale of meat from diseased animals. The loss of cattle from disease rose from 1%, the point at which it had stood prior to 1842, to 6% annually and would have gone much higher but for the settled policy of slaughtering every diseased animal that could be delivered to the butcher before it died.

At this time, Prof. John Gamgee, the most brilliant veterinarian of his time and certainly one of the ablest of any time, was striving unceasingly to induce the government to establish a veterinary police force to prevent the importation of diseased animals, to prevent the sale of diseased meat and to accomplish the eradication of plagues already present.

Gamgee was opposed successfully by the live stock industry, which was suffering more than any other from the lack of just such a live stock sanitary organization as Gamgee advocated. And in 1865 rinderpest was again brought to England; this time in an importation direct from Russia.

The London Veterinary School had long refused to include cattle pathology in its curriculum and in Gamgee's opinion, this subject was not given adequate attention in the Edinburgh Veterinary College, the only other veterinary school in the British Isles at that time. He realized, as no one else in his country, that a veterinary profession, trained in the pathology of food producing animals, is indispensable to a profitable live stock industry.

The prevalence of rinderpest continued to increase in continental Europe although many, perhaps most of the countries enforced a 21-day quarantine on all cattle legitimately imported, and thus were apparently successful in preventing the importation of the disease through such channels. The expense of the quarantine resulted in a great deal of smuggling and so far as the records show, it was the smuggled cattle that brought the disease into country after country and continually renewed it. Nor must we over-

look the importance of what was at that time a new factor in the spread of disease. The extension of railroads during the 15 years following 1850 in the words of a delegate to the first internation veterinary congress "exceeded anything that could have been conceived of," and the question no longer was, "What is to be done to avoid a danger which threatens us from a distance of some eight or twelve miles? But what measures are in the main to be taken against the danger which now threatens all states in common?"

Because of the increasing menace of rinderpest to the live stock industry of the British Isles, Gamgee in March, 1863, issued a call from Edinburgh for an International Veterinary Congress, with a view to the formulation of plans for the control of rinderpest and all other communicable diseases of animals. The Congress met in Hamburg, Germany, July 14-20, 1863. It was attended by Prof. Gamgee and upwards of 100 of the leading veterinarians of continental Europe. The purposes stated in the call were:

1. To ascertain the extent of contagious diseases of animals in the various countries.

2. To determine the amount of imports and exports of live stock and the direction in which the plagues spread in each country.

3. To consider the means essayed to prevent the introduction and spread of disease in the various countries.

4. Based upon this information, to draw up resolutions to be submitted to the different governments of Europe with a view to instituting a uniform system for protection from live stock plagues.

It will thus be seen that the International Veterinary Congress in 1863 was the first organization to attempt to formulate uniform regulations for the shipment of live stock from one state to another and for the international control of infectious diseases of domestic animals.

The deliberations of this Congress constitute a valuable source of information. The resolutions adopted were of the most basic sort. Many matters brought up at the Congress were postponed for consideration at a second Congress, which it was unanimously agreed should meet at Vienna, two years later.

As was to be expected, it developed during the first Congress that there was no uniformity in the regulations on live stock matters, and the disadvantages of this were apparent to all.

Somewhat anticipating this action on the part of the veterinarians, a commission of lawyers, representatives of the various states in the German confederacy, had met in Dresden in January of the same year for the purpose of devising uniform regulations for the control of all commerce among the states of the confederacy. After the manner of lawyers, this commission continued its deliberations for about three years. Recognizing its lack of information concerning animal diseases and the proper warranties to be given the buyer by the seller of live stock, it referred this question to the second International Veterinary Congress at its meeting in Vienna in 1865, at which time a proposal for warranties was drawn up by the veterinary congress and that proposal explains why in Europe to this day, the seller and not the purchaser of a diseased animal is the loser. Had this country been represented at the second International Veterinary Congress and had our government, as other governments did, adopted the recommendations of that Congress on the subject of warranties, we would probably not see diseased hogs rushed to market on the outbreak of cholera, thus distributing the disease all along the way. There would be little incentive to send a sick animal to the packer provided the seller lost its value on condemnation at slaughter.

The Twelfth International Veterinary Congress as every reader of this magazine knows is to meet in this country in New York City, next August. It is an organization with a long record of important achievements; deserving of support and attendance this year by every American veterinarian.

Abstracts

By F. VOLKMAR,
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Advantages and Disadvantages of Ointment Bases

On the basis of pharmacodynamic considerations and experiments the author[1] considers vaseline unsuitable as a basis for ointments. Aside from the fact that it is a skin foreign fat, it does not allow the dissociation of the drugs suspended in it. Lanolin is somewhat better suited as a medium for ointments, but its power of dissociation is still low.

Unguentum fissani has been found to be an ideal base for ointments. Due to its content of labil milk-protein it possesses organ-affinity. The fissan-colloid, contained in it, allows of minute dispersion of the therapeutic substances. The fissan-colloid has an inhibiting and soothing effect upon the inflammatory reaction. The labil milk-protein will exert an action in the sense of the colloidal therapy.

Paraffin in Gastritis and Impaction in the Horse

Of 188 horses suffering either from acute dilatation[2] of the stomach, or impaction of the ileum, one-half were treated with additions of liquid paraffin, and the other half without this addition. The following observations were made:

Addition of liquid paraffin to the treatment resulted in a greater percentage of recoveries over those where it was left out. The difference was especially marked in cases of dilatation of the stomach. The additional use of paraffin will considerably reduce the duration of the disease in cases of dilatatio ventriculi, obstipatio, and paresis of the small intestine. When treatment intervenes early, the number of fatal cases may be markedly lessened by the addition of paraffin. In delayed treatments, paraffin seems to be without effect upon the course of the disease. When paraffin is added to the treatment, enteritis will occur less frequently, or at least in a milder form. Laminitis may be avoided almost entirely.

Cat Stomach Worm Infestation in Swine

In a herd of hogs a number of brood-sows were observed[3] to fall off in weight and condition. Some of them died from cachexia in spite of careful management. In those clinically examined the body temperature was found to be subnormal (37.3°C); the thorax appeared flat. Cough was occasionally heard; the appetite was decreased. The wall of the abdomen appeared flabby, the abdomen tucked up, and the flank markedly hollow.

Fecal examination revealed eggs of *Hyostrongylus rubidus, Oesophagostomum dentatum, Trichuris suis,* and *Trichostrongyls instabilis,* also coccidial oocysts. The blood count showed 5,390,000 erythrocytes and 13,100 leucocytes; the latter consisted of 56% lymphocytes, 7% monocytes, 35% neutrophile, 2% eosinophile, and 1% caryocytes. There was a slight anisocytosis and polychromasy present. The main lesions at autopsy were found in the stomach. The mucosa of the fundic and plyoric regions was pale pink, peculiarly swollen, and covered with a tenacious mucus (Gastritis catarrhalis chronica hypertrophicans). The microscopical examination of the mucus revealed the presence of numerous specimens of *Ollulanus tricuspis,* the cat stomach worm.

This nematode is colorless and quite transparent. The anterior extremity, and often the entire body, is spirally curled up. The maximum length of the females is 1mm.

[1] Kindermann, W. 1933. Die Pharmakodynamik von Vaselin, Lanolin, und Unguentum Fissani. (Pharmacodynamics of vaselin, lanolin, and Unguentum Fissani.) *Deutsche Tierärztl. Wchnschr.* 41 (47):740-742.

[2] Ritter, H. 1933. Die Behandlung der Magenerweiterung und Dünndarmverstopfung des Pferdes durch Beigaben von Paraffinum liquidum. (Treatment of acute dilatation of the stomach, and of impaction of the ileum in the horse by additions of liquid paraffin.) *Berl. Tierärztl. Wochenschr.* 49(46):730.

[3] Kotlan, A. and Mocsy, J. v. 1933. Ollulanus tricuspis Leuckart als Ursache einer chronischen Magenwurmseuche beim Schwein. (Ollulanus tricuspis the cause of a verminus gastritis in hogs.) *Deutsche Tierarztl. Wchnschr.* 41(44):689-692

of the male 0.6-0.8mm; the width is 0.044 and 0.039mm respectively. The anterior and posterior third of the body are attenuated. The cuticle possesses 12 to 16 longitudinal striations. The eggs measure 52-57 by 34-35 microns in diameter.

The presence of *Ollulanus tricuspis* in an animal cannot be diagnosed by the usual clinical methods.

* * * *

Control of Bang's Disease in Lithuania

To combat contagious abortion in Lithuania, Rolle[4] advocates the vaccination with avirulent cultures possessing antigenic properties. After four years of artificial cultivation of a strain, apathogenic for guinea-pigs, he has obtained a type which is completely avirulent for cattle. The author uses this culture now for preventive vaccination. Of 50 non-infected animals, vaccinated when pregnant from two to seven months, not a single one aborted.

The vaccine is not only preventive, but possesses therapeutic properties. His observation from the vaccination of 300 pregnant cows, some of them infected with contagious abortion, others not infected, gives him the impression that abortion does not occur more often following the use of his living vaccine, than from the use of killed cultures.

In herds in which abortion exists he advises to have each new addition to the herd vaccinated immediately. Heifers should be vaccinated two to three months before breeding. According to his observation on vaccinated infected cows, the bacteria will disappear after two years.

Bulls are not to be vaccinated with living cultures, because the agglutination will persist in the blood for as long as 1½ years after vaccination, and it would be impossible to determine whether an infection with virulent or avirulent bacteria is present.

[4] Rolle, M. 1933. Die Bekämpfung des ansteckenden Verkalbens durch Impfung in Lettland. (Vaccination as preventive measure against contagious abortion in Lithuania) *Deutsche Tierärztl. Wchnschr.* 41 (45):707-709.

[5] Oppermann, Th. and Doenecke, H. 1933. Beiträge zur Epidemiologie und Diagnose der Tuberkulose des Pferdes. (Epidemiology and Diagnosis of tuberculosis in the horse.) *Deutsche Tierärztl. Wchnschr.* 41 (42):659-662.

Diagnosis of Tuberculosis and Swamp Fever

A number of tubercular horses[5] were subject to the sublimate test for the more accurate evaluation of the clinical blood-picture. It was then found that those horses which exhibited an anemic blood picture, or in which the sublimate test and the pigeon test were positive, revealed on autopsy and subsequent histological examination perivascular foci of roundcell infiltration and considerable hemosiderin deposits in the livers. The spleens showed a loss of iron content throughout; in short, the picture pathognomonic for infectious anemia (Swamp-fever).

On the basis of histological examination and animal experimentation the authors furnish convincing proof that a mixed infection with tuberculosis and infectious anemia was present in these horses.

It is pointed out that a positive tuberculin reaction in horses is not in itself proof of the existence of tuberculosis. If the tuberculin reaction proves positive in a horse suspected of infectious anemia, then a careful clinical examination for differential diagnosis becomes necessary. If tuberculosis is present, either alone or complicated with infectious anemia, then the leucocytic layer of the blood column will be found to be increased, which as a rule is not the case in infectious anemia.

* * * *

Etiology of Swine Flu

Investigations[6] carried out at the German Government Experiment Station at the island of Riems proved that in herds where catarrhalic pneumonia of pigs was an enzootic occurrence, and where the symptoms of cough and lung-involvement are predominating, these symptoms represent an idiopathic infectious disease which is called swine-flu.

The cause is a virus which is to be distinctly differentiated from the virus of hog-cholera. Infection with the virus of swine-

[6] Waldman, O. 1933. Die Aetiologie des Ferkelkümmerns. Die Ferkelgrippe. (The etiology of catarrhal pneumonia of pigs. Swine-flu.) *Berl. Tierärztl. Wochenschr.* 49 (44):603-607.

flu, as far as is known, takes place during the first four weeks of life and is almost always complicated with secondary bacterial infections. The principal secondary invader is *Bacterium influenzae* suis, a rod resembling the human influenza bacillus.

Chronic hog-cholera, too, may be the cause of catarrhal pneumonia as a sequel to an epizootic of acute hog-cholera in a herd. The onset of a lingering course of chronic hog-cholera in a herd from the beginning, is extremely rare and is not considered to be of epidemiological importance.

On the basis of his investigations of hog-cholera and in his experience, the author concurs in the opinion of others that an acute epizootic disease, caused by *Salmonella bipolaris suiseptica,* so-called acute swine-plague, probably does not exist.

The bacteriological investigations in connection with swine-flu give rise to the assumption that a chronic epizootic disease due to Salmonella bipolaris suiseptica, the socalled chronic swine-plague, does not exist either, and that the cases which, on the basis of finding Salmonella bipolaris suiseptica, are usually diagnosed as chronic swine-plague, are really late sequelae of swine-flu.

Brucella Infection

In view of the custom of feeding the surplus milk, in times of overproduction, to pigs, Stockmayer[7] investigated the infectivity of Bang-infected milk for hogs; incidentally he tested the degree of constancy of the bovine type.

He arrived at the following conclusions: Shotes possess a considerable natural resistance toward bovine type of *Brucella abortus.* Cow's milk, containing *Brucella abortus,* fed to pigs over a period of 3½ and 4 months respectively, failed to produce symptoms, although the average consumption of Bang-bacteria amounted to 330,000 to 2,000,000 per day.

If Brucella cultures were injected subcutaneously into shotes, agglutinins and amboceptors would form. Agglutination proved to be superior to complement fixation in that positive reactions occurred earlier and remained positive for a longer period of time. The detection of Brucella germs in the circulating blood usually became possible after five days; they could at times be demonstrated as late as five weeks.

In the infected animals the Brucella germs were found mostly in spleen and liver, occasionally in the lungs.

An infection coexisting with hog-cholera seems to facilitate the localisation of Brucella germs in the internal organs.

Brucella abortus of the bovine type did not suffer a change of its biological characteristics on account of the passage through the body of the hog.

Bovine Coccidia Carriers[8]

From 1925 to 1931, inclusive, 23 severe cases of coccidiosis occurred in bovines varying in age from six days to two years in a dairy herd averaging a total of 125 animals per year. Coccidiosis was observed in every month of the year with the exceptions of January and October. Coccidiosis occurred every year except in 1929. In 1928 and 1929 examination of feces of older bovines was made to determine the presence of coccidia. On December 31, 1928, the feces of 31 apparently healthy cattle, two to seven years old, showed 40% carriers. Most

[7] Stockmayer, W. 1933. Ueber Brucella-infektion bei Schweinen. (Brucella infection in hogs.) *Berl. Tierärztl. Wochenschr.* 49(47):741-744.

[8] Skidmore, Louis V. Bovine Coccidia Carriers. *Jnl. of Parasitology,* Vol. XX, No. 2, pp. 126, Dec. 1933.

Breakfast cart. Such a vehicle is in use on practically all the estates in the Virgin Islands. (Kinsley Photo, see page 68.)

of the carriers were more than three years old. Of 26 animals, varying from a few days to seven months of age 11.5% were carriers. On July 7, 1929, examination of 31 bovines showed 32.2% carriers. Here 40% of the carriers were four to nine years old. On December 12, 1929, examination of the feces from 41 cattle, 9.7% were found to be carriers. In most instances, different animals proved carriers upon each examination. Not any of the carriers showed clinical symptoms of coccidiosis. The voluminous amount of feces to examine and the different periods of development of coccidia in bovines will account for variable results. Likewise, continuous reinfection and intermittent infection with coccidia vary the findings so that it is impossible to state that cattle once found to be carriers are always carriers (chronic carriers). *Eimeria zurnii, E. cylindrica* and *E. smithi* were found.

* * * *

Prenatal Ascarid Infestation in Dogs and Foxes

It has been definitely established that various parasites can be transmitted from mother to fetus. This is especially true of ascarids, although until 1916 it was believed that animals become infested only from eggs laid in the lumen of the digestive tract. Stewart in that year demonstrated the presence of worm larvae in the liver and lungs of rats and mice experimentally infested. This was followed by the work of Yoshida, Ransom and Foster, Shillinger and Cram, and others who made precise investigations on the migrations of *Ascaris lumbricoides* and *Belascaris marginata.*

In experimental infestations, particularly in dogs, it has been demonstrated frequently that these larvae can surmount the placental barrier and infest the fetus in abundance, notably in the lungs and liver. Five days after birth the larvae of *Belascaris marginata* from the lungs are already mounting the trachea and descending by deglutition to the gastro-intestinal tract where according to Akagi (1926) they develop to sexual maturity in 21 to 25 days. According to Fullerton (1921) such larvae might even mature in the intestinal tract itself.

Hadley, Warwick and Gildow (1924), investigating lung worm troubles in fox ranches drew attention to the high incidence of lung affections of parasitic origin. These investigators found worm larvae in the lungs of the cavader of a newborn fox that had never taken any nourishment.

Professor Henry of Alfort (1931) reported the same facts in newborn foxes coming from various fox-breeding farms of different parts of Europe. He found numerous ascarid larvae in the lungs and trachea and notwithstanding the high mortality, the only lesions found were hemorrhagic marking in the pulmonary tissue.

It is, therefore, important for breeders of animals to consider two distinct forms of worm parasitisms: (1) a larval form, principally pulmonary, capable of being highly fatal to the young; and (2) an intestinal form in animals a little older, both of which may be of prenatal origin.

The author reports a case in a French bulldog that was separated from its mother at birth and given for nursing to a Chow Chow already nursing pups four days old. In 24 and 28 days the bull pup sickened, quit suckling and emaciated rapidly. Worms expelled in the feces and vomit were largely adult females containing eggs. The four pups of the Chow Chow raised in the same niche remained worm-free. Authorities on dog breeding insist upon the importance of this question.—*Abstracted by L. M.*

[8] **Heredite des Maladies Parasitaires. Ascaridiose Prenatale (Heredity of Parasitic Diseases: Prenatal Ascaridiasis). Revue Vétérinaire, Vol. LXXXV, August, 1933, pp. 440-442.**

WORDS COMMONLY MISPRONOUNCED

abattoir—ă″ bă″ twär′
abdomen—ab do′ men
acarus—ac′ arus
agar—ah′ gar
allergy—al′ ur jĭ
alopecia—al o pe′ sĭ ah
ankylosis—ang ki lo′ sis
apoplexy—ap′ oplexy
apparatus—appara′ tus
arecoline—ă rek′ o lēn
arytenoid—aryt′ enoid
azoturia—azotu′ ria
bistoury—bis′ too re
cachexia—kă kek′ sĭ ah
cannula—cann′ ula
cantharides—kan thar′ i dēz
carbolfuchsin—kar″ bol fook′ sin
catheter—cath′ eter
chorea—ko re′ ah
cocci—kok′ si
coccygeal—kok sij′ e al
coryza—kŏ ri′ zah
deaf—def
Demodex—de′ mo deks
diarrhea—di ah re′ ah
douche—doosh
duodenum—du o de′ num
dyspnea—dysp ne′ a
dystocia—dis to′ sĭ ah
écraseur—a krah zĕr′
eczema—ec′ ze ma
emesis—em′ esis
endocrine—en′ do krin
enema—en′ ema
epiphyseal—ep ĭ fiz′ ĭ al
esophageal—e so faj′ e al
Eustachian—u sta′ kĭ an
ewe—u
exacerbation—eks as er ba′ shun
exostosis—ex os to′ sis
favus—fā′ vus
febrile—feb′ ril or fe′ brīl
gingiva—jin jī′ vah
gums—gums
hemoglobin—hemoglo′ bin
hog—hog
Holstein—hōlstīn
hydatid—hydat′ id
hygiene—hi′ je ēn
iodine—ī′ o dīne or i o din
kamala—kama′ la
Koch—kōk
laryngeal—laryn′ geal
larynx—lar′ ynx
luteum—lu′ teum
lysis—ly′ sis
Micrococcus—mi kro kok′ us
necrobacillosis—nĕ kro bas il lo′ sis
panacea—pan ă se′ ah
parenchymatous—par en ki′ mă tus
paresis—par′ esis
Pasteur—pahs tĕr′
peroneus—per o ne′ us
perspiration—per spi ra′ tion
petechiae—pe tek′ e e
Petri—pa′ tre
pharynx—far inks
phlegm—flem
phthisis—ti′ sis, te′ sis, thi′ sis or the′ sis
proglottides—pro glott′ ides
prostate—pros′ tate
puerperal—pu ur′ pĕ ral
purgative—pur′ gative
purulent—pu′ rulent
ration—ra′ shun
ravenous—rav′ en ous
Roentgen—rēnt′ gen
sagittal—saj′ ĭ tal
respiratory—respi′ ratory
saphenous—saphe′ nous
satyriasis—sat ĭ ri′ a sis
scabies—ska′ bĭ ēz
sciatica—si at′ ĭ kah
serum—se′ rum
spay—spay
squamous—squa′ mous
stasis—sta′ sis
strychnine—strik′ nēn
syncope—sin′ kŏ pe
taenia—te′ nĭ ah
teat—tēt
trichina—trĭ ki′ nah
venom—ven′ om
veterinary—vet′ erinary
virulence—vir′ u lence
vitamin—vi′ tam in
Weil—vīl or wīl
zoology—zo ol′ o jĭ

Vowels at the end of a syllable have the long sound, and the others have the short sound, unless otherwise indicated. Stedman's dictionary has been used wherever possible; in a few cases Funk & Wagnall's. Where syllables are not separated the correct pronounciation is the obvious one.

Akron, Ohio. Wesley O. Keefer.

Success and Failure in Hog Cholera Control

From 1915 to 1932 inclusive, there was over 12,000,000,000cc of anti-hog cholera serum and over 650,000,000cc of simultaneous hog cholera virus produced by licensed plants in the United States. There was five times as much serum produced in 1932 as there was in 1915, and according to estimates there was approximately five times as many hogs vaccinated in 1932 as there was in 1915, and yet the cholera losses, excepting for 1926, remained practically the same throughout this 18-year period. It is universally conceded that there is no other biologic that is as efficient as anti-hog cholera serum. The continuous losses from cholera must be attributed to causes other than the use of inferior serum and virus. The fact that hog cholera and swine vaccination has cost the swine industry of the United

States over a half billion dollars in the last 18 years, should be proof sufficient that there is something basically wrong with our procedure. This persistent and continuous cholera loss indicates that at least most of the states in the principal hog raising section of the United States have either insufficient regulations or laws for the efficient control of hog cholera or the officials of these states are not enforcing them. The U. S. Live Stock Sanitary Association has repeatedly recommended keeping virus out of the hands of the laity. This recommendation has not been accepted by those in authority.

The losses incident to cholera *can* be reduced by quarantine, regulation of transportation, competent veterinary service and proper control of the distribution and use of virus.—*A. T. Kinsley.*

* * * *

Doctors and the Death Penalty

Dr. Jos. Ignace Guillotin, a brilliant Paris physician, suggested to Louis XVI of France a machine for "humanely" beheading persons, to take the place of hanging or decapitation with an axe. The device was named guillotine in honor of the Doctor who suggested it. Louis XVI was later beheaded by it and Doctor Guillotin narrowly escaped the same fate.

Dr. Alphonso D. Rockwell, who died recently at the age of 93, was the inventor of the electric chair for the execution of criminals. Lethal gas is used in Nevada for the execution of criminals. It was proposed by physicians.

(Kinsley Photo, see page 68)

Colicky, not long to live.

Gangsters are partial to a sub-machine gun for the execution of their enemies. This is a development of the revolving barrel weapon invented by Dr. Richard Jordan Gatling, during the Civil War. Gunmen still refer to their weapons as "gats."

* * * *

Iodine Fed to the Dam Increases the Viability of Foals

Harvey of Minnesota reports as follows: "From 1910 up to and including 1925, the percentage of foals raised at University Farm was probably less than the average breeder raised. During that time every precaution was taken to insure the foaling of strong, healthy colts. In most cases the mares were worked right up to foaling. They foaled in a clean box stall; an attendant was present to render assistance if necessary and to see that the colt's navel was disinfected immediately after birth. In spite of this, only a little over half the number of colts dropped during that time were raised. The records show that ten died of navel ill, several died of a streptococcus infection, three died because the mare had difficult parturition, two died of a colon bacilli infection, one died of joint ill, one died of goiter and in ten cases the cause of death was unknown.

"Since 1925 the percentage of foals raised at University Farm has greatly increased. The same precautions were taken at foaling time as was the case in previous years. The mares were handled the same way throughout the year, except that once a week during approximately the last seven months of the gestation period about one gram of potassium iodide was added to the grain ration of each. During the past four years three foals were lost. One foal died of navel ill, two were lost through abortions, the case of which could not be determined. Cultures made from the aborted foetus' showed no bacterial infection of any kind."

SECOND INSTALLMENT

Development of Veterinary Medicine in North America

By D. M. CAMPBELL

II—THE FIRST PERIOD—1790 to 1850

In order to face the future fearlessly and shape it aright, nothing is more indispensable than a knowledge of the past—MARRIOTT.

1. Agriculture and Transportation at the Close of the 18th Century

THERE is valid reason, as will be seen later, for closing this period with 1850, since it was in the following year that rapid progress in veterinary matters began; but the selection of 1790 as the beginning of this record is more or less arbitrary. The date might be set 50 years or 100 years or 150 years earlier without materially adding to the record of veterinary achievement. The closing decade of the 18th century may be taken as the time when the science of veterinary medicine was beginning to receive the attention and encouragement of scientific men in Great Britain, with which of all countries this country maintained closest contact, and when scientific works of English veterinary authors were beginning to find readers in this country. Some of these works were soon to be published in this country and the custom continued for three-quarters of a century and longer. Also at the close of the 18th century we find a feeble recognition of the need of veterinary service for agriculture and for the animals, horses and oxen, upon which all land transportation depended.

IT IS improbable that all veterinary works published in this country have come to the attention of the writer, but unlikely also that many of those not examined contain much of importance not included in those examined. Nevertheless, the record should be complete; it is important that all readers knowing of any works of this period (1790-1850), not in the following list, send in the information at once.

Veterinary works of this period so far examined, include:

"Treatise on the Prevention of Diseases Incidental to Horses" by James Clark, Philadelphia, 1791.

"Farriery Improved" by Bracken, second American edition, Philadelphia, 1798.

"The Bite of Dogs" by James Mease, 1801.

"The Citizen & Countryman's Experienced Farrier" by J. Markham and experienced Indians, Baltimore, 1803.

"Dictionary of Veterinary Art," by Thomas Bordman, 1805.

"Observations on Hydrophobia" by James Thacher, Plymouth (Massachusetts), 1812.

"The Farrier Magazine or Archives of Veterinary Science, containing the Anatomy, Physiology and Pathology of the Horse and Other Domestic Quadrupeds" compiled by James Carver, Philadelphia, 1818.

"A Practical Treatise on the Diseases of the Foot of the Horse" by Richard H. Budd, Baltimore, 1825.

"The Grooms' Oracle, a Pocket Stable Directory" by John Hinds, Philadelphia, 1831.

"Every Man His Own Cattle Doctor" by Matthew Small, Philadelphia, probably 1831.

"The American Farrier" by H. L. Barnum, Philadelphia, 1832.

"The Horse and His Diseases" by John Hinds, 1830, American edition by Thomas M. Smith, 1839.

"The Farmer's and Horseman's True Guide," Rochester, 1841.

"The Veterinary Surgeon or Farriery Taught on a New Plan" by John Hinds, Philadelphia, 1841.

"Mason's Farrier" by Richard Mason, M.D., 1842.

"Stable Economy" by John Stewart (8th edition), 1842.

"The Horse" by Youatt, Philadelphia, 1843.

"The American Farrier and Horse Trainer" by O. H. P. Fancher, Louisville (Kentucky), 1844.

"Youatt on the Dog" by Wm. Youatt, edited by E. J. Lewis, M.D. (American edition), 1846.
"Domestic Animals" by R. L. Allan, 1847.
"The Sportman's Vade Mecum" (Diseases of Dogs) by Jonathan Peel, New York, 1850.

SOME attention may be given, with advantage, to the system of farming and of transportation in the cities following the Revolutionary War. It had in some respects a determining influence on the development of veterinary science.

The population of the country was overwhelmingly rural. The roads were wretched except for a few graded, and sometimes graveled, roads called "pikes" connecting some half-dozen of the larger cities. Next to these in quality were "corduroy" roads made by laying small logs side by side across the road. Thousands of miles of roads consisted of trails cut through the forests; no surfacing; no grading; no ditches for drainage; a hopeless mire in wet weather and a maze of ruts when dry. There was almost no travel; a farmer, and his son after him, might be born, live an average lifetime and die without ever being out of the township.

"In the country and in small towns a greater degree of intelligence on the part of anyone—except the parson and the doctor—than that possessed by his neighbors, brought ridicule to the possessor. If a farmer ventured to make an experiment or adopt new modes of culture, or if he did not plant just as many acres of corn as his father had planted before him, and that too 'in the old of the moon;' sow just as much rye to the acre; use the same number of oxen on his plow; get his crops in on the same day; or hoe it as his father and his grandfather did; and if he did not wear the same homespun dress and adopt the same religious views and prejudices, he was shunned by old and young and looked at as a visionary."[2]

THERE was unlimited free land. The farms were not fertilized. When a field ceased to produce the farmer abandoned it and tilled another. Barns were moved to get away from the accumulated manure. Few farm implements were employed; except for his cart and the clumsy harrow, a farmer could carry them all on his back. The sickle used by the reapers in Ruth and Naomi's time was the harvesting machine for small grain, and the limiting factor in its production. Threshing was by the flail wielded by hand.

Wooden plows were used; it took three men to operate one. The first cast-iron plow was imported in 1797, but the innovation made no headway. There was the greatest repugnance to adopting any new implement. Although plows with a metal moldboard had been used in Scotland for 50 years, farmers here clung to the wooden moldboard for another generation; many of them holding that a metal plow poisoned the soil and ruined the crops. Hay was cut with a scythe and frequently was so scarce in the cities that it had to be imported from England to keep the horses from starving! The first successful mowing machine was introduced in 1831.

There was not a periodical publication in the country devoted to agriculture and the only work on the subject was "Essays on Field Husbandry" written 40 years earlier by the Reverend Jared Eliot.

Men of vision saw the need for agricultural improvement, but they were not farmers. Agricultural associations were formed in South Carolina and in Philadelphia in 1784; in New York in 1791; in Massachusetts in 1792 and to the number of more than a thousand by the close of the Civil War. General Washington, in 1796, urged upon the Congress the support of agriculture. Then as now it was said to be "depressed." All these early attempts to foster agriculture failed because the farmers could not, or would not, read. "Book farming" was looked upon as impertinent or useless. It was not until 1810 at an agricultural fair held in Georgetown, D. C., that any farmers could be persuaded to exhibit their products for the liberal prizes offered for excellence.

The rivers were the arteries of commerce. Land transportation was limited to short hauls from the farm to the river landing or to a nearby town. Travel was on horse back. Farm work was done by oxen and hauling was by both horses and

[2]Flint, C. L., "One Hundred Years of Progress," Boston, 1871.

oxen, mainly by the former. The wagons were huge, clumsy and strong, they had to be. Carriages could not traverse the indescribably bad roads. All travel was slow; even mail contracts usually called for a speed of less than five miles an hour. Apples were the only fruit cultivated and they were small and sour; used only for making cider.

COLUMBUS brought the first horses to this continent from Spain in 1493. Horses were introduced into Florida in 1527 by Cabeça de Vacca who landed 42 animals. All perished soon afterwards. The wild horses of the southwest are believed to be descendants of horses imported by DeSoto. A French lawyer, M. L'Escarbot in 1608 brought some horses to Quebec—probably the ancestors of the Canadian pony. The horses in the original thirteen colonies came from England and Flanders.

Horses furnished the only means of travel in the cities other than walking and were kept by all but the most poverty stricken. Many oxen were used in the cities for the heavier hauling, but in the main, draying was with horses. Great numbers of them were kept in the towns and cities.

CATTLE from England were brought to Virginia in 1610. So important were they considered, that a penalty of death was provided for killing a cow or a heifer calf and the punishment for being an accessory to the killing was burning off the right hand. Danish cattle were early introduced into New England, where they soon made the finest work oxen in the world.

Until Bakewell's time, cattle in England were kept for slaughter until they were seven or eight years old; the carcasses weighed an average of only 370 pounds; but improvement was under way in the last decade of the 18th century the average weight of dressed carcasses at Smithfield Market increased 25 per cent. In this country imported cattle were referred to as this or that breed; all native cattle were called "scrubs." One may surmise they were very small. Improvement by select breeding and by English importation did not begin till 1810, although one fine bull was imported in 1785. In 1790 Bakewell's teaching had not reached these shores. Cattle were exposed in the coldest weather "to toughen them." In Virginia, it was the common belief that it would kill cows to house them and milk them in the winter time!

SWINE were first introduced into the territory that is now the United States by DeSoto, who brought a number of animals from Cuba to Florida in 1538. The swine brought to the northern colonies came from England and The Netherlands. They are described as being "long-legged, large-boned, slab-sided, flop-eared, unprofitable and unsightly beasts better calculated for sub-soiling than for filling a pork barrel." They were habitually permitted to run at large in the country and to some extent in the cities. Hog cholera was unknown until many years later.

A FEW sheep were first taken into Virginia in 1609. In 40 years the number had increased to 3,000. The Dutch introduced sheep into New York in 1625. They largely fell a prey to wolves and dogs and 20 years later there were only sixteen in the whole colony. The first importation of sheep into Masachusetts was in 1633.

During colonial days, sheep husbandry was carried on entirely different from the manner of the past three-quarters of a century. There were no large bands, but small flocks were kept on nearly every farm, being a necessity for the homespun, the universal wearing apparel in the rural communities.

The first importations were coarse-wooled, long-legged, unprofitable animals. The first fine-wooled sheep introduced into the country were brought from Spain by Wm. Foster of Boston in 1793. He relates his experience as follows:

"In April 1793, on returning from Cadiz where I had been passing several years, I brought out three Merino sheep—two ewes and a ram—the export of which at that time was severely prohibited and attended with much difficulty and risk. We had a long passage—75 days—and the sheep were in a dying condition. Fortunately, there was on board a Frenchman that had been with Spanish shepherds who cured them by administering injections."

These animals came to an unfortunate end. Mr. Foster having to make a sudden trip abroad, gave them to Andrew Craigie of Cambridge, who not realizing their value, slaughtered them for food. Within 20 years Craigie paid $1,000 for a Merino ram no better than the one he had eaten. The price of wool rose to $1.50 a pound.

Other importations from Spain were made in 1802 and in 1810. At the time of the latter importation "Merino fever[3]" broke out, ran through every farming community in Massachusetts Bay colony, and then subsided. This importation of a highly infectious disease apparently had no significance for the agriculturists; since 75 years later, D. E. Salmon said: "It is as easy to land a diseased animal on our shores as a well one."

IN THE matter of diseases of live stock, the farmer was remarkably complacent and self confident. His religion, and judged by present day standards he was a very religious individual, in its effect opposed progress in either human or veterinary medicine. Death was attributed to an act of God and sickness in man and the loss of animals from disease or accident, was looked upon as an evidence of Divine wrath; to be borne with humility and mitigated by penitence. Even live stock breeding was hindered by this religious attitude. Under the hard conditions that prevailed for riding and draft animals—exposure, overwork, coarse, innutritious feed and abuse—the mule was better adapted for their use than either horse or the ox; but the mule was an extremely unpopular animal, used hardly at all in the northern colonies, and bred to a very limited extent and that only in the south. The principal reason for the unpopularity of this animal seems to have been the Biblical injunction: "Thou shalt not let thy cattle (animals) gender with a diverse kind," and this attitude prevailed to a constantly, though slowly, diminishing degree for two generations longer, in fact clear down until the Civil War.

Superstition was well-nigh universal and the belief in the supernatural as applied to the ordinary events of life was the rule. Most of the operations on the farm were regulated by, or timed to certain "signs" that were implicitly believed to regulate the production of crops, the thrift of animals and the happiness of the people. There was no neighborhood but had some "granny" who by magic words, or mystic performance, could arrest hemorrhage, even miles away; foretell death and other calamities; promote the breeding of animals; alleviate snake bites, etc. In most neighborhoods, there were one or more persons possessed of some "secret receipt" of marvelous potency for the cure of ailments of animals, and of only a little less efficacy in man. Usually these "receipts" were of a nature that their power would be wholly lost if their contents were divulged. There was also an abundance of those "handy men," willing to assist in dystocia, wounds or colic, stoppage of the water or megrims or what have you, as a neighborly act.

OF STRICTLY veterinary practitioners engaged in no other occupation, there is no record, although from indirect evidence it may be asserted with confidence that they existed, in the main almost as ignorant as the animals they treated; a thoroughly disreputable lot whose equipment for practice consisted of a collection of "receipts"—infallible cures—one for each ailment, gross ignorance and a monstrous effrontery.

There is evidence too, but no direct record, of educated and no doubt skillful veterinary practitioners. Clark's "Preventive Veterinary Medicine" published in

[3]In 1815-17 speculation ran wild in the importation and breeding of sheep; the price of quite ordinary individuals running up to $1,200. The state of mind that brought this about was often referred to as "Merino fever." It is not to be confused with the disease of sheep referred to here.

1791, could have been intended for none other and publishers don't issue expensive books for which there are no purchasers —they don't remain publishers if they do. These practitioners were probably to a considerable extent physicians, who had given up medical practice or engaged in the treatment of animals in conjunction with their medical practice. It is known that Dr. Benjamin Rush of Philadelphia, the leading physician in the whole country and Dr. James Thacher a leading physician of Massachusetts were much interested in veterinary medicine.

The larger cities must have offered considerable inducements to qualified individuals to take up veterinary practice; farming communities could have offered scarcely any such inducement. When the children were routinely given sassafras tea in the spring "to thin their blood"; sulphur and molasses "to tone up the system," and pumpkin seed "to clear out the worms," it was not to be expected that professional assistance would have been sought to prevent ailments of livestock. When the abysmally ignorant, superstitious midwife or even a neighbor woman was the invariable accoucheuse and the family doctor was not thought of until the next day if "the baby didn't come right," it was not to be expected that a cow with dystocia would receive more skilled care than neighbors could provide.

IN THESE times when our commerce extends to all parts of the world, it is difficult to realize the extent to which our commercial intercourse was confined to England at the close of the 18th century, or the degree to which customs and practices of the old country prevailed also in the new. To a very large extent our literature, like our manufactured articles were obtained from England, and this applied also to veterinary literature, as will be seen when the early veterinary publications are taken up for discussion.

However, in the matter of improved live stock, the American colonists were slow to follow the English breeders, who by 1790 had been aroused by Bakewell's teaching and were devoting a great deal of effort to improving their breeds of live stock. In England coincident with the awakened interest in live stock improvement, at the beginning of the final decade of the 18th century, there was, among men of science, a quickened interest in veterinary science to which, according to General Smith: "Nothing was more valuable than the attitude of John Hunter, Henry Cline, Sir Ashley Cooper and Doctor Fordyce, backed up by that patron of sciences Sir Joseph Banks. While from the ranks of the medical profession during the last years of the 18th century were recruited Bracy Clark, Wm. Moorcraft, Delabere Blaine and Edward Coleman, whose names will live as long as veterinary profession exists."

It was not for a generation after 1790 that the importation of fine breeding animals from Europe really got under way, and in no small degree affected veterinary practices in this country as improved breeding in Britain had quickened veterinary science there.

Claude Bourgelat, 1712-1779

Born to luxury and educated for the law he gained international renown as a horseman. He wrote much; founded the Royal Veterinary School of Lyons in 1762, and the Veterinary School at Paris (Alfort) in 1765. These were the first veterinary colleges and are still in existence.

N. Y. ASSOCIATION CONTRIBUTES TO INTERNATIONAL VETERINARY CONGRESS FUND

The 20th annual meeting of the Western New York Veterinary Medical Association was held at Buffalo, December 14, 1933, with fifty members in attendance.

After a short clinical program, the following officers and directors were elected: Bernard P. Wende, Buffalo, president; W. C. Buck, Dansville, vice president; F. F. Fehr, Buffalo, secretary-treasurer; Frank McBride, Tonawanda, and Floyd T. James, Bliss, directors for a term of three years; and D. D. Ford, Niagara Falls, director for two years to fill the unexpired term of Doctor Buck.

Among other business transacted, the Association voted to contribute one hundred dollars toward defraying the expenses of the 12th International Veterinary Congress, to be held in New York City next August.

Seventy persons attended the banquet, after which the ladies went to a theatre party and the members listened to a talk by Dean Hagen on Equine Encephalomyelitis. This was followed by two reels of motion pictures showing the symptoms during different phases of the disease.

R. H. Volgenau, Buffalo, gave a book review of Udall's book on "The Practice of Veterinary Medicine" in his usual able manner.—F. F. Fehr, Secretary.

TOO MUCH MONKEY BUSINESS

Statistics show that we have seventy million more pounds of butter on hand this year than we had a year ago. That is bad for you, Mr. Dairyman. Just why is there too much butter? The most outstanding reason for this surplus is due to the fact that we, as a nation, are eating too much "monkey butter," cocoanut, nuco; or what-not.

Roughly speaking, the United States consumed about 300 million pounds of imitation, or substitute, butter last year.

The average production per cow per year in the United States is less than 150 lbs. of butter, therefore we as a nation are supporting two million "cocoanut cows." This is entirely too much of a "monkey diet" for any healthy dairyman's stomach, and it is certainly resulting in a financial "bellyache" for him.

Here is the startling part of this story—a recently conducted investigation by eminent authorities has revealed the fact that Mr. Farmer of the United States of America consumes about as much substitute butter per capita as his city brother.

Now, Mr. Dairyman, don't you really think this is chiseling?

After everyone in the U. S. A. from the President up, and down, is trying to stabilize the price of butter by buying large quantities of it and donating it to the poor—still some dairymen are eating substitute butter, forcing the government to buy real cow butter and give it to the poor.

If that isn't "monkey business," then we will ask any dairyman in the United States to furnish a better name for it.—Ole Hanson, General Manager, Farmers' Equity Cooperative Creamery Association, Nebraska, in *Hoard's Dairyman.*

Bernard Mann, formerly at 1536 North 8th Street, has moved his offices and hospital to 2519 North Broad Street, Philadelphia, Pa.

ARMY VETERINARY SERVICE

The promotion of each of the following-named veterinary officers is announced:

Christian W. Greenlee, from Major to Lt. Col., November 26, 1933.

Wm. H. Houston, from Major to Lt. Col., November 27, 1933.

Jack G. Fuller, from Capt. to Major, November 25, 1933.

Major John R. Ludwigs, Brooklyn, N. Y., for the convenience of the Government will proceed to his home on or about December 31, 1933, and await retirement.

Colonel Walter Fraser is relieved from assignment and duty in the office of the Surgeon General, Washington, D. C., effective at such time as will enable him to comply with this order, is then assigned to station at the Presidio of San Francisco, Calif., will proceed, at the proper time, to New York City and sail on transport scheduled to leave that port on or about May 4, 1934, for San Francisco, and upon arrival will report for duty as station veterinarian, Presidio of San Francisco, and in addition, for duty as port veterinarian, San Francisco port of embarkation, and to the commanding general 9th Corps Area for assignment to duty with the Medical Department at his headquarters.

Lt. Colonel John R. Underwood is assigned to duty at Fort Bliss, Texas, effective upon completion of his present tour of foreign service.

Colonel William A. Sproule is relieved from duty as station veterinarian, Presidio of San Francisco, Calif., and additional duty as port veterinarian, San Francisco general depot, and at headquarters 9th Corps Area, effective at such time as will enable him to sail on transport scheduled to leave San Francisco, Calif., for New York, N. Y., on or about March 6, 1934; upon arrival in New York City will proceed to Fort George G. Meade, Md., for duty.

Veterinary Reserve Corps

New acceptances:

Nolan, James Dixon, 2nd Lt., Raymond, Washington.

Promotions:

Joyner, Ashley Josephus, to 1st Lt. 2016 Laurel Ave., Knoxville, Tenn.

New acceptances:

Brandly, Paul Jacob, 2nd Lt. 430 E. 4th St., Brooklyn, N. Y.

Cowley, Frank, 2nd Lt. 303 Prairie Ave., Pueblo, Colo.

Dollahite, James Walton, 2nd Lt. 203 E. Brin Ave., Terrell, Texas.

Lindley, Wm. Hautecoyne, 2nd Lt. 129 Elm St., Lawrenceburg, Ind.

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CHAPPEL BROS. INC., 503 Peoples Ave., Rockford, Illinois

ATLANTA MEETING OF THE SOUTHERN STATES VETERINARY MEDICAL ASSOCIATION

This association held its 18th annual meeting in Atlanta, Georgia, on November 23-24, 1933. The program was well balanced, having an equal number of papers on small animal and large animal practice.

President Fitch of the A. V. M. A. was present and gave talks on the national association and the results of recent investigations of animal diseases at University Farm, St. Paul, Minnesota. He also demonstrated with motion pictures some of the problems in the control of diseases of wild animals, especially the moose.

H. E. Treman, Rockwell City, Iowa, gave an interesting address on Large Animal Practice, bringing out many easier and better ways to perform many of our daily operations. With a prepared specimen he demonstrated many diseases of the horse's foot and treatments. C. E. Salsbery of Kansas City explained some of the problems of serum therapy which brought out much discussion, and questions on the action of serums and vaccines. Other papers were read and discussed by members of the association and much practical knowledge was derived from them.

Prof. D. W. Daniel, Clemson College, was the principal speaker at the banquet, giving a humorous talk for about an hour, after which there was dancing.

The morning of the second day was devoted

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to papers and discussions and after lunch all assembled at the hospital of Lee Hopping where numerous operations were performed Doctor Treman leading in operations on large animals and Doctors Wright and Kepp on small animals. One case of heartworm was demonstrated by postmortem examination.

H. C. Nichols of Ocala, Florida, was elected president. The next meeting will be held in Jacksonville, Florida.

M. R. Blackstock, Secretary.
Spartanburg, S. Car.

Eight of the 23 counties in Maryland reported hog cholera losses during December 1932. Dorchester and Montgomery each had 2 outbreaks, Caroline, Cecil, Prince George's, Queen Anne's, Talbot, and Washington had 1 each. Two of the outbreaks were due to feeding raw garbage, 1 to a roving sick hog that generously shared his germs with hogs on an adjoining farm, 1 was caused by purchase of new stock, and 6 were apparently caused by cholera-infected materials in the kitchen refuse. Two of these latter were of more than passing interest, as both owners were well aware that infected kitchen refuse is a potent source of cholera. However, the drain and wash water was emptied where shoats had access to it, and these first developed illness. In another instance, care was taken that no kitchen refuse was fed to hogs, but meat and bones purchased and fed hounds, was occasionally shared by shoats escaped from the hog lot. This diet was better undoubtedly for the dogs than for the hogs, as the latter developed cholera. In the 10 outbreaks reported, 568 hogs were involved. Of these, 38 were sick, and 36 were dead at the time the cases were investigated. Approximately 68% of all the hogs involved, were in the two garbage feeding plants.

LOS ANGELES COUNTY LIVE STOCK DEPARTMENT PRESENTS INSTRUCTIVE EXHIBIT

In order to give the dairymen a graphic and practical illustration of the losses in cattle due to nails and pieces of wire, a four foot high model cow was designed by Dr. L. F. Conti, of the Los Angeles County Live Stock Department, and placed on exhibition at two Fairs and Livestock Shows.

The viscera were modeled to scale in their natural positions and cleverly designed motor driven mechanism furnished lifelike motion to the jaws, heart, diaphragm and reticulum. A nail through the reticulum and diaphragm impinged on the heart, and with each impulse showed clearly the manner in which the injury occurs in the field.

Literature describing the economic importance of this condition and giving suggestions as to its prevention was distributed to those interested, and attractive posters and displays of pathological material attracted hundreds of dairymen. The display, which afforded

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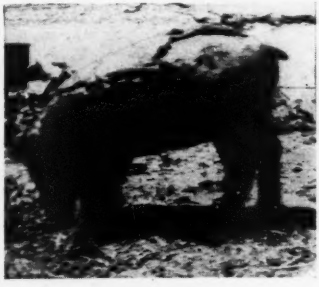

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opportunity for the veterinarians in charge to contact these stock owners and discuss the various disease control projects which the department supervises, received very favorable comment in local newspapers and agricultural journals.

Randalia, Iowa, population 126, applied to the CWA and obtained Federal Civil Works funds with which to build 15 hitching posts.

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LONGLEY MOVES TO LOS ANGELES

O. A. Longley, San Fr cisco, has leased his hospitals at San Franc nd at San Carlos to Doctors Jarden anc .rup, and moved to Los Angeles to be associated with John F. McKenna in t itol Company.

Doctor Longley is . . . of the popular veterinarians of the west coast, and has been prominent during the past 25 years in veterina activities there. He is ast president of th California State Asso iation and was for number of years, secretary of the State Boar of Examiners, and has been active in the A. V. M. A. for over 25 years. During the Worl War he was commissioned Captain in the Veterinary Corps and served as instructor a Camp Greenleaf.

Since 1919, Doctor Longley has been Pacific Coast manager for the Lederle Laboratories in addition to operating the San Francisco Dog and Cat Hospital. His new work will be that of general sales manager for the Vitol Company.

Ray Schuchert died at his home, Keystone, Iowa, December 17th. Doctor Schuchert had been located at Keystone 16 years and had a large practice in Benton and adjoining counties. He served in the army during the Punitive Expedition into Mexico in 1916. He is survived by his widow, one son, two daughters, his mother and several brothers and sisters.